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## ORIGINAL ARTICLES.

### THE POST-OPERATIVE USE OF INTRAVENOUS SALINE INJECTIONS.<sup>1</sup>

By EUGENE BOISE, M.D.,  
OF GRAND RAPIDS, MICH.

THE five post-operative conditions which seriously endanger the life of the patient are: (1) hemorrhage, (2) shock, (3) sepsis, (4) uremia, (5) intestinal obstruction. In all of these conditions the intravenous use of saline solutions is indicated as a primary and extremely valuable factor in our life-saving efforts. This bare statement may be all that is necessary to cause mental assent on the part of this audience, though perhaps a brief review of the facts on which the assertion is grounded may be of value as aiding to bring forth corroborative facts from the large experience here represented.

I believe the intravenous route should have preference over all others because, first, by the use of a proper technic there is practically no more danger than by any other route; second, it supplies fluid to the system most quickly and most certainly; third, it brings heat directly to the cardiac and arterial ganglia; and fourth, by this method the stimulating effect of the saline solution on the heart-muscle is more immediate and more pronounced. In exceptional cases subcutaneous injections may preferably be used. It may also be well in certain cases to supplement intravenous injections with high rectal injections. But, accepting the assertion that the intravenous method is practically no more dangerous than the others, its use should be the rule, the judgment of the operator telling him when it should be aided or supplanted by one or both of the other methods. Again, I believe the solution should always be used as hot as can be safely borne—or at a temperature of 115° or 118° F. Whether the post-operative condition of the various organs is one of depression or excitation, heat as thus supplied will be beneficial. In acute anemia, whether caused by hemorrhage or the exhaustion consequent on the disease itself, raising the temperature of the fluid circulating throughout the system will aid in re-establishing physiologic activity.

In shock, in uremia, in dynamic ileus (especially if supplemented by high rectal injections), the ad-

dition of hot saline solution to the blood is beneficial. In hemorrhage, so severe as to prove fatal, though about one-half of the normal quantity of blood always remains in the body, death is caused by acute anemia of the nerve-centers. If the blood-vessels can be quickly refilled by a fluid which is not injurious to the normal blood, life will be preserved and all the organs will continue their physiologic activity. Of these solutions the normal saline solution has proven the most acceptable. It not only distends the capillaries and arterioles, but it dilutes the blood remaining in the vessels and renders it available for purposes of nutrition. It seems to exert a directly stimulating effect on the exhausted nerve-centers, and this effect is more rapidly produced and heightened if the solution is hot. André Claisse<sup>1</sup> thinks that the intravenous use of saline solution also exerts a direct hemostatic influence, aiding in the formation of a clot at the point of hemorrhage.

Many patients present themselves for operation in a condition somewhat resembling that brought about by an acute hemorrhage. In other words, emaciated, pale, with low arterial tension, and small, rapid compressible pulse, the normal volume of blood greatly lessened and the reserve of fluid stored in the system greatly depleted. Such patients are poorly prepared to sustain the further exhaustion incident to the preliminary washing-out of the bowels by free saline catharsis—as often practised—and while they will probably recover from an operation, even somewhat prolonged, the recovery will be comparatively slow and the immediate post-operative conditions of thirst and restlessness greatly aggravated. To such patients the free administration of water during the few days immediately preceding operation, and the use of a large intravenous injection of hot saline solution after the patient is anesthetized, will be of great benefit, not only in lessening the anxiety of the anesthetizer, but in allaying the discomforts necessarily consequent to the operation and in aiding the speedy re-establishment of normal physiologic functions.

In post-operative shock, a condition in no sense connected with or dependent on hemorrhage, this use of hot saline solution has proved one of the most valuable therapeutic measures we possess. In this condition the heart and arteries are nearly empty and the capillaries and veins proportionally dis-

<sup>1</sup> Read at the Twenty-third Annual Meeting of the American Gynecological Society, held at Boston, May 24, 25, and 26, 1898.

<sup>1</sup> *Gaz. Med. de Paris*, September 26, 1896.

tended. But this is not (as many contend) a condition of paralysis of the heart and arteries whereby the blood, by some unexplained process of natural selection, collects in the capillaries and veins instead of equally in the paralyzed arteries, but is rather one of spasm of the heart and arteries whereby the blood is forced into the capillaries and retained in the veins. In such cases the experience of operators everywhere has proved that the injection directly into a vein of a hot saline solution ( $118^{\circ}$  or  $120^{\circ}$  F.) is extremely valuable. The beneficial result is not merely due to the additional fluid suddenly thrown into the system, but is largely due to the fact that the solution is hot. The heat (modified somewhat by the lower temperature of the blood) proves directly sedative to the irritated cardiac and vascular ganglia, promoting relaxation of the muscular spasm of both heart and arteries and a rapid readjustment of the circulatory conditions. To obtain the best and most rapid results it is necessary that the injection should be into a vein rather than an artery, that the hot solution may be carried to the heart and arteries as rapidly and with as little dilution as possible.

In sepsis, also, recent investigations and experiments have demonstrated the great value of intravenous injections. There are three factors which must be considered in estimating the probabilities of a fatal result in a case of sepsis: (1) the quantity of germs; (2) their virulence; and (3) the power of resistance residing in the individual. Whether the intravenous use of saline solutions meets all of these indications or not has not yet been fully determined, though numerous investigations have been made attempting to settle these questions with some degree of definiteness, and experiments on animals are continually being made along the same line. But in cases of grave sepsis that such use of saline solution is of value, testimony from an increasing number of operators in various countries, is accumulating.

Dr. Berlin of Nice<sup>1</sup> reports a case of septicemia following vaginal hysterectomy, in which there was great distention of the abdomen, subnormal temperature, dyspnea, and all the grave symptoms of approaching death. When death seemed imminent, he injected saline solution twice (after a short interval). At first the symptoms seemed aggravated, but improvement soon began, resulting in recovery after twelve days.

Dr. André Claisse<sup>2</sup> says that in infections and grave intoxications the injections are indicated. When the temperature is high, and especially when the general symptoms reveal a grave pathologic con-

dition, this treatment should be employed in combination, of course, with the proper local treatment. He says, "As to contraindications, there are none in acute anemia or operative or traumatic shock. It is the only method of treating efficaciously a dying person. In infections the condition of the kidneys, the heart and the lungs must always be watched. . . . If the kidneys are profoundly altered and the heart weak, we must act slowly and cautiously. . . . In this treatment we have an agent which, logical in theory and based on experimentation and clinical facts, may give the most favorable results in cases which seem beyond the reach of medicines."

Lejars<sup>3</sup> says these injections are of the utmost value, and the great trouble is that they are not used in sufficiently large amounts. Vedel<sup>4</sup> in attempting to establish the value of and the indications for the use of these injections, experimented with dogs, which were first poisoned with the bacillus coli, which causes rapid death, with hemorrhages and gastro-intestinal troubles, anuria, etc. He found that recovery followed the use of these injections which first caused more or less reactionary disturbance. Also, in an alcoholic subject, with adynamic pneumonia, in whom the temperature had been elevated ten days, an intravenous injection caused, primarily, reactionary symptoms, but after several hours the temperature fell to normal and the patient recovered. The same result followed, but more gradually, in two cases of staphylococcal infection. Vedel therefore concludes: "In the infectious diseases saline intravenous injections may always be administered, but they must be practised as soon as possible after the beginning of the infection; and the important indications must be looked for in the condition of the pulse, of the blood-pressure, of diuresis, and of the general condition. Anuria and albuminuria are not contraindications."

Tommasoli of Palermo<sup>5</sup> reports a case of burns, so severe as to be generally considered fatal, in which saline solution was used subcutaneously several times, resulting finally in recovery in an otherwise hopeless case. In an attempt to demonstrate the actual value of these injections, as also to throw some light on their mode of action, he experimented on dogs, severely scalding them. Out of ten animals treated with saline injections, only two died, while all the control animals died within two days. Also, he found that the blood of dogs severely scalded, but not treated with serum, being injected into healthy animals caused their death unless serum

<sup>1</sup> *Ther. Wochenschrift*, January 11, 1896.

<sup>2</sup> *Gaz. Med. de Paris*, September 26, 1896.

<sup>3</sup> *Medicine Moderne*, May 13, 1896.

<sup>4</sup> *Independence Medicale*, September 9, 1896.

<sup>5</sup> *Monatshefte für praktische Dermatologie*, June 15, 1896.

injections were given. These experiments would tend to show that an actual antitoxic influence is exerted by the saline solution, but the exact way in which this influence is exerted is not yet sufficiently demonstrated.

Roger<sup>1</sup> in experiments on rabbits, has shown that in animals poisoned by various toxins the intravenous injection of saline solution caused the elimination of the toxins at least one hour sooner than occurred in the control animals.

Many other experiments have been made along the same lines; but while they all show that these saline injections are of very great benefit in all cases of sepsis, the exact mode of their action has not been definitely determined. It is, of course, evident that they greatly dilute the blood and thus lessen the quantity of germs acting on the nerve-centers at any one time or place, but it would seem that they must exert influence in other directions; that they actually antagonize the toxins and increase the individual resistance. In addition to this, they certainly aid very powerfully in eliminating the poison, both through the kidneys and perspiratory glands.

In those cases of partial or complete suppression of urine following operation, which so frequently result fatally in spite of our best efforts, the intravenous administration of saline solution will be of great assistance, whether the suppression is consequent on previously existing disease of the kidneys, or on conditions incident to the operation itself. Indeed, I think I am justified in saying that it is the best therapeutic agent at our command. It will, moreover, broaden our field of work in that it will enable us to operate in cases which we have heretofore avoided because of degenerative changes in the kidneys. Hare and others, by intravenous injections of saline solution, have entirely dissipated those uremic symptoms which shortly precede death in cases of chronic organic disease of the kidneys. Dumarest<sup>2</sup> has found intramuscular injections in cases of uremia from chronic kidney disease very efficacious. Coma began to pass away within an hour, and the toxic symptoms rapidly disappeared. He concludes that, (1) these injections are not contraindicated by renal alterations. On the contrary, they exert the best influence on the toxic symptoms due to these alterations, and even on simple albuminuria; (2) pulmonary edema and anasarca do not constitute an obstacle to this method; (3) salt water probably acts by a double mechanism, tonic and antitoxic in the beginning, which is palliative; and secondarily, eliminating, which is curative; (4) these injections are pre-eminently the proper means of treatment in

desperate cases. In the last stages of uremia and eclampsia they are a most powerful agent in the struggle with death.

If intramuscular injections have proved so valuable, we can much more certainly rely on the same benefit following intravenous injections, inasmuch as the same fluid would be supplied to the system, only much more certainly and rapidly. The toxic elements circulating in the blood would be more rapidly and surely attenuated, and if there be any direct antitoxic influence it would be more rapidly exercised. Moreover, although Dumarest says that pulmonary edema and anasarca are not contraindications, we can more readily expect good results from the intravenous method, inasmuch as the vascular pressure in the kidneys is surely raised, and if they can be stimulated to renewed activity this method is the most promising. Again, in cases of ileus, so severe as to endanger life, intravenous injections will afford valuable aid. Cases are seen occasionally so severe or so advanced as to threaten certain death if not relieved by surgical means, and yet the condition of the patient is such that operation seems absolutely contraindicated.

Moltschini, at the Moscow Congress, said that in ileus fecal vomiting is generally a contraindication for operation (or in other words, when fecal vomiting occurs it is generally too late for operative interference). He also says: "The condition of the patient's strength is that on which the outcome of the operation depends, therefore weakness, collapse and intestinal paralysis are contraindications." In intestinal obstruction we estimate the condition of a patient's strength with reference to operation by the character of the pulse. In this condition there are two elements which combine to render the character of the pulse progressively bad, the first, of small importance, the removal of fluid from the system by the frequent vomiting; and the second, of much greater importance, the poisoning of the nerve centers by products absorbed from the intestines. Intravenous injection meets both these conditions, the first, by the mechanical addition of water to the blood; the second, in the way we have seen in discussing its action in other forms of poisoning, and both, by attenuating the poison and powerfully aiding in its elimination. In addition to this, it so increases the patient's power of endurance or resistance as to render operation possible in otherwise hopeless cases.

Injections may therefore be used both before and after operation with great benefit. Before, in all cases where the vitality of the patient is low, as in acute or chronic anemia, traumatic shock, especially if complicated by hemorrhage, the state of shock or

<sup>1</sup> *Bulletin Medicale*, December 2, 1896.

<sup>2</sup> *Province Medicale*, September 19, 1896.



collapse due to severe and overwhelming poisoning of the nerve-centers, as from rupture of an abscess into the peritoneal cavity, and in cases of albuminuria due to organic disease of the kidneys. They may be used with great benefit after operation in all those conditions which directly endanger life,—hemorrhage, shock, uremia, and blood-poisoning of all kinds.

As to the technic, I shall say but little. The apparatus should be as simple as possible, and yet so arranged that the temperature of the fluid can be ascertained and regulated as it passes into the vein. An apparatus, for instance, composed of two reservoirs, one for very hot and the other for cold water, emptying into a common reservoir, like an ordinary irrigating apparatus, the outflow from each to be regulated according to the heat at the lower extremity of the tube, as demonstrated by a sensitive thermometer so attached to the tube that the bulb is bathed in the solution. The part introduced into the vein should be of glass, narrow at the point like an ordinary medicine-dropper. A free incision should be made in order that there may be plenty of room. The vein should be well exposed and incised longitudinally. All air should be expelled from the tube by allowing the fluid to run through it, and the glass tube should be inserted into the vein while the fluid is escaping, care being taken that it penetrates the vein and not merely its sheath.

**SURGERY OF THE PNEUMATIC SINUSES OF THE SKULL IN RELATION TO OPHTHALMIC AND AURAL SURGERY.<sup>1</sup>**

By ROBERT SATTLER, M.D.,  
OF CINCINNATI.

To review the literature or to offer case-reports is not the purpose of this communication, but rather to give a brief synopsis of the results of personal experience with the practical surgery of the pneumatic spaces of the skull, such as fall within the scope of ophthalmic and aural surgery. Years ago I profited by the personal demonstration and teachings of Professor Zuckerkindl of Vienna. Several years after this (1882) he published in book form the results of painstaking labor under the title, "The Normal and Pathological Anatomy of the Nasal Cavity and Its Pneumatic Accessories." This anatomical treatise, with its accurate drawings and descriptions, stimulated me, as it has many others, to renewed interest in a subject concerning which there has always been much speculation, but little or no certain knowledge, and for this reason no practical surgery.

The pneumatic spaces of the temporal bone, because of their more frequent invasion by acute and

chronic pathologic processes, unmistakable symptomatology and imperative necessity for surgical interference, have long before the other sinuses claimed and received the fullest recognition on the part of the general and aural surgeon. This has been owing mainly to the more ready access of this locality, the excessive suffering attending the acute cases, and the grave complications involving the meninges, as well as other dangers to life in connection with the chronic ones, for which there was relief and cure only through the medium of surgery. As a result of the painstaking labors of many in the practical field of surgery and more accurate clinical and pathological knowledge, all led and stimulated by the suggestions of Professor Schwarz of Halle, we have at the present time, for this region, a most practical and eminently successful surgery both so far as method and technic are concerned. With special emphasis, the same statement applies to the diseases and surgery of the maxillary sinuses. The brilliant achievements of dental surgery are so well known that further reference is unnecessary.

The lesions of the pneumatic spaces of the frontal, ethmoidal and sphenoidal bones are disclosed by the almost uniform presence of characteristic symptoms on the part of the walls of the orbit, its margins or contents, and even if these uncommon cases have not attracted more general attention they, nevertheless, belong to the province of ophthalmic surgery. Unfortunately these cases have not received, even from the majority of ophthalmic surgeons, the attention they deserve and only those unmistakable examples of disease in which these sinuses become the retention-cavities for pus, larvæ, micro-organisms, or tumors were the indications for rational surgery looked upon as imperative, and even in such cases, unnecessary delay was oftentimes resorted to.

Surgical interference of some kind almost forced itself upon the surgeon, unless, as not infrequently happened, he looked on until, after months of tedious suffering, fistulous openings with spontaneous evacuation of the retained contents of the choked sinuses resulted. In other instances, more successfully managed, surgery ceased with the evacuation of the contents of the distended cavities, and relief from suffering once accomplished no further interference was thought necessary. Only in exceptional cases was a more complete method adopted. This had for its object a more thorough exploration of the affected locality, and if deemed necessary, also of the adjacent sinuses, for the better diagnosis of the real nature of the disease as well as for more satisfactory irrigation, or for local treatment subsequently. My own mistakes in diagnosis and the inadequate surgical measures which I formerly adopted have fully

<sup>1</sup> Read before the Ohio State Medical Society.



taught me the truth of this statement. My experience leads me to say that many of the cases which are recognized as periorbitis, cyst of the orbit, caries of the margin, obstinate frontal and supraorbital neuralgias, etc., are in reality only the conspicuous manifestations of obscure chronic lesions of the frontal, ethmoidal, and maxillary sinuses.

I have seen several instances of caries of the inferior margin of the orbit in which chronic disease of the maxillary sinuses was responsible for the orbital lesions and which disappeared after an opening had been made from the mouth along the canine fossa. I remember one case in a child, of periorbitis of the lower margin of the orbit followed by caries, in which by accident, later, a fistulous opening in the mouth was discovered. This was enlarged at once along the canine fossa, pus evacuated, and the sinus drained, this procedure being followed by rapid subsidence without further treatment for the orbital lesion. I recall to mind a number of cases of periorbitis in which I was satisfied to evacuate the pus only and resort to packing and irrigation, and all were unsatisfactory. These were not cases of localized periorbitis or periostitis at all, but were really cases of frontal and maxillary sinus disease, followed either by spontaneous perforation of the bony wall, with detachment and bulging of the periorbital covering, appearing under the clinical picture of a localized periorbitis, the real nature of the disease being marked because of the latency of more positive manifestations of sinus disease of this region. In the cases similar to these an exploration of the frontal or maxillary sinuses would disclose the origin and cause for the periorbitis and caries of the margin.

Periostitis of the margin of the orbit in which traumatism can be excluded is one of the rarest lesions and in the majority of such cases the lesion is situated in one of the accessory air-cavities referred to. The so-called cysts of the orbit, in particular those met with in old persons, in which a syphilitic history and catarrhal rhinitis with polypi of the middle or superior regions of the nose are found, are not cases in which the cyst develops in the orbit but are uncommon expressions of disease of the ethmoidal cells or sinuses. The deformity in these cases resulting in displacement of the eye is marked and the periorbitis is often so tense that the presence of a solid tumor may be inferred. Another feature of these cases is that pressure against the protrusion which causes the proptosis is often followed by vertigo. The region of the anterior ethmoidal cells and the sinuses of the superior walls in the proximity of the lamina cribrosa explains this.

This was especially instanced to me in a case of

extensive epithelial cancer of the orbit and pneumatic sinuses of the skull in which it became necessary to explore and open, not only the frontal and maxillary sinuses, but the ethmoidal cells and sphenoidal sinuses. In this case pulsation of the floor of the brain cavity was distinctly visible. In another case of extensive sinus disease with the growth of an exostosis within the sinus, pressure against the bony protrusion caused syncope at once. The operation in this case disclosed a large exostosis of the right frontal sinus and extensive implication of the ethmoidal cells.

Another instance of erroneous diagnosis to which I have referred is inveterate neuralgia of the frontal and infra-orbital regions. These cases are identical with those met with in the ear and referred to as neuralgia of the mastoid. Uncontrollable neuralgia of this region, when all other causes are eliminated, may be due to disease of the pneumatic cavity of the frontal or maxillary sinuses, and relief can be afforded by thorough surgery alone, *i. e.*, the opening of the sinuses, and not as is often advised and practised, by division and resection of the supra- or infra-orbital nerves.

It is the surgical method applicable to these obscure pathologic invasions of the pneumatic cavities marked by interminable chronicity and uncertain symptomatology and etiology, attended by sequences or complications which comprise a number of distinct pathological processes to which it is my main purpose to refer. Our knowledge concerning the purpose and function of the pneumatic cavities has made little or no advance. We have, however, acquired valuable practical experience concerning pathologic conditions, immediate and remote, resulting from various causes, or more accurate symptomatology, and certainly more satisfactory indications for surgical treatment. These remote sequences of chronic sinus disease comprise: fistulous openings, tortuous trails appearing in remote localities from the seat of the lesion, as for instance, on the side of the neck; as a result of a lesion in the pneumatic cells of the temporal bones, at the inner, upper, lower, and inferior margin, and even at the extreme outer margin of the orbit, as the result of disease of the frontal sinus; lateral displacement of the globe, or proptosis with formation of a firm tumor; as the result of a disease of the ethmoidal sinuses due to the retention and perforation under the periorbita of the glue-like contents of these cavities. With lesser frequency we meet with chronic empyema, hyperostosis, exostosis, periostosis, and the growth of osteophytes or exostoses; rarefaction of these cavities with dilatation, in exceptional cases, to enormous proportions; contraction of these spaces, either con-

fined to one or several, or as observed in these rare cases of leontiasis ossea affecting all alike.

The real advance and greater perfection of the surgery of the accessory cavities of the skull dates from the time that the old-fashioned drills and trepanning-instruments were exchanged for the chisel and mallet. As already stated, it is to Professor Schwarz and his followers that we are mainly indebted for the rapid and brilliant progress in that department of aural surgery which concerns the pneumatic spaces and mastoid antrum of the temporal bone and also the graver complications of middle ear disease. The more infrequent complications—sinus, thrombosis, subdural cholesteatoma, etc., etc.,—formerly unrecognized, or at least not relieved by surgical means with the same ease and thoroughness as at present, are all embraced in the scope of one of the simplest and most successful surgical methods, and its technic rendered easy and safe by the selection of the instruments referred to.

The surgery of the pneumatic spaces of the temporal bone is so thoroughly understood, and the same statement applies to the maxillary sinus, that they are referred to only because they serve as the model for the surgical treatment of the accessory cavities of the frontal ethmoidal and sphenoidal bones. My own experience prompts me to suggest and to emphasize the necessity of the same thoroughness in diagnosis and the same prompt and painstaking attention in surgical methods for these obscure lesions of the ethmoidal, sphenoidal, and frontal sinuses, both for exploratory diagnostic and curative purposes. The sinus frontalis is certainly easy of access. Many of its chronic lesions are obscure and unaccompanied by positive clinical evidences, and an exploratory operation can alone disclose the real nature of such lesions, and is certainly justified. The external opening must be preferred to the uncertain method of attempting to find the extranasal opening of the infundibulum and resort to ineffectual attempts to explore or bring about drainage along this channel. This passage can be restored far more easily from above when once a large and roomy opening into the sinus has been made from without and which at the same time gives positive information concerning its contents, dimensions, and the state of its mucous lining. The ethmoidal and sphenoidal sinuses are not so accessible, but the external method is in all operative procedures the one to be preferred to attempts to reach these cavities through the nose.

I have long since abandoned such attempts for these obscure chronic cases and rely mainly on the external operation. In every case of ethmoidal disease, I make a free incision over the frontal sinus

and carry it well down on the side of the nose along the internal border of the tear-sac. The soft parts divided and hemorrhage arrested, the periosteum is detached and the tear-sac pushed to one side. The sinus frontalis is then explored, whether found normal or otherwise, its vertical depth is determined, and a point externally which corresponds to it is selected and marked. In a region between this point, which marks the floor of the frontal sinus and the upper inner border of the tear-sac, I perforate the external wall with chisel and mallet, carefully penetrating, with the inner orbital wall as a guide, in a slightly downward direction, until I reach the anterior and middle cells. With greater caution along the same course the sphenoidal cavity may be explored. I have done this but twice (exploration of the sphenoidal sinuses), once for extensive epithelial carcinoma of the orbit and face, which had withdrawn its activity from the surface structures to the accessory sinuses. All were involved and the case terminated fatally. In another case there was the most marked rarefaction of the frontal ethmoidal and sphenoidal sinuses ever found. Two weeks after the operation it required two yards of iodoform gauze,  $1\frac{1}{2}$  inches wide, to pack these cavities, which may convey some idea of their enormous dilatation.

#### THE ETIOLOGY OF YELLOW FEVER.<sup>1</sup>

By FREDERICK G. NOVY, M.D.,

OF ANN ARBOR, MICH.;

JUNIOR PROFESSOR OF MEDICINE AND PHYSIOLOGICAL CHEMISTRY  
IN THE UNIVERSITY OF MICHIGAN.

THE study of the cause of yellow fever has been carried on during the past two years in South America, and as a result two organisms, isolated by two independent workers, have been described. Early in May of last year there were received at the Pasteur Institute of Paris several cultures from Dr. W. Havelburg of Rio de Janeiro. His article appeared in the *Berliner Klinische Wochenschrift* (1897) and in abbreviated form in the June number of the *Annales de l'Institut Pasteur*. A few days later cultures were received from Dr. J. Sanarelli of Montevideo. Sanarelli's first memoir was published in the June number of the *Annales de l'Institut Pasteur* (1897). This was followed in September by a second, and in October by a third, paper.

At the suggestion of Dr. Roux of the Pasteur Institute I undertook a comparative study of the organisms received from Havelburg and from Sanarelli. It was evident at the start that the two organisms were not identical, and this view was confirmed by subsequent investigations. The next step was to as-

<sup>1</sup> Read before the Michigan State Medical Society, Detroit, May 6, 1898.

certain which of these two organisms might be considered as the causal factor in the etiology of yellow fever. The result, it may be said in advance, was unfavorable to both. My investigations were begun in Paris at the Pasteur Institute, and have been continued on my return to Ann Arbor. It gives me great pleasure in this connection to thank Dr. Roux for his active interest, for the many valuable suggestions received from him, and for the generosity with which he placed at my disposal the unequaled facilities of the Pasteur Institute.

#### I. COMPARISON OF THE HAVELBURG AND SANARELLI BACILLI.

A careful comparison of the descriptions given by these two investigators will show at once that the two organisms are quite unlike. This fact is fully established on making actual, side by side, comparisons. The bacillus of Havelburg is somewhat thicker than that of Sanarelli. This difference is seen in pure cultures, and especially in stained preparations made from the animal body, as the guinea-pig. The difference is also marked in cultures on agar or gelatin grown at 16° C. They both grow singly or in pairs, and only occasionally are short threads found. A striking difference is met with in the hanging-drop examination. The Havelburg bacillus possesses active Brownian motion, and is devoid of real motility. When grown, however, on gelatin or agar at 16°, a very thick gelatinous cell-wall forms, and the organism then shows no Brownian motion. On the other hand, the Sanarelli bacillus is exceedingly motile. Few organisms, indeed, can be said to possess as active motion. The latter organism, on proper staining, shows the usual long, wavy flagella, whereas the Havelburg organism shows no such appendages. Giant whips, which will presently be described, are met with in cultures of the Sanarelli bacillus, but never in those of Havelburg.

The two bacilli stain equally well by the ordinary anilin dyes, and are not stained by Gram's method. Spore formation has not been observed in either. The indol reaction is always marked with the Havelburg bacillus, especially in cultures thirty-six to forty-eight hours old. On the other hand, the Sanarelli organism produces at most a slight trace of indol. Old agar or gelatin plates of the Havelburg bacillus have a strong amine and indol odor. Milk is coagulated or rendered decidedly ropy by the Havelburg bacillus in about forty-eight hours, but is apparently unaffected by the Sanarelli bacillus. The former, according to Havelburg, coagulates milk in about twelve hours, but apparently on cultivation this property, as in the case of other colon bacilli, is markedly diminished.

The potato-cultures show the well-known characteristics and differences observed between colon and typhoid-fever bacilli. Thus, the Havelburg bacillus, like the former, gives a thick, yellowish, or slightly brownish, rather dry growth; whereas the Sanarelli organism, like the Eberth bacillus, yields a moist, colorless, invisible growth.

On litmus-colored gelatin or agar containing glucose or lactose, at 35° to 39° C. both bacilli develop a marked acid reaction. According to Sanarelli, his bacillus slowly gives rise to an acid reaction. This was also true of the cultures when first obtained from him. Since then the organism has considerably increased its acid-producing power. Gas is produced in abundance in glucose and lactose media by the Sanarelli as well as by the Havelburg bacillus. In this respect, as well as in acid production, the two bacilli correspond to the colon group. The production of gas and acid can be observed in media when these are kept from six to eight hours at 39° C. In Uschinsky's medium<sup>1</sup> the Havelburg bacillus grows exceedingly well, and the growth differs in no way from that given by each of the six distinct colon bacteria that were studied at the same time. On the other hand, the Sanarelli bacillus and seven cultures of the Eberth bacillus of diverse origin failed entirely to grow. This marked difference has been repeatedly met with. In this respect, as well as in potato-culture, the Sanarelli bacillus approaches the Eberth bacillus.

A sharp distinction between the Havelburg and Sanarelli bacilli is observed when these are grown in Esmarch dishes on Stoddart's medium,<sup>2</sup> or in the tube medium of Hiss.<sup>3</sup>

Stoddart's medium has the following composition: Water, 1000 c.c.; gelatin, 5 per cent.; agar, 0.5 per cent.; pepton, 1.0 per cent.; salt, 0.5 per cent. This medium is poured into Esmarch dishes, sterilized, and allowed to solidify. The center of the medium is then *touched* with the organism to be examined, and set aside for eighteen to twenty-four hours at 35° C. Those organisms that possess motion will diffuse as a more or less transparent veil all over the surface of the medium, whereas non-motile bacteria form a small, sharp-bordered colony. Consequently the Sanarelli bacillus diffuses over the entire surface of this medium in a few hours, whereas the Havelburg bacillus shows absolutely no diffusion even after several days. The method is, therefore, of value in differentiating motile from non-motile bacteria, and may be made use of for the isolation of Sanarelli's bacillus from the organs of yellow-

<sup>1</sup> Vaughan and Novy, "Ptomaines and Leucomaines," p. 24, 1896.

<sup>2</sup> *Jour. of Path. and Bact.*, vol. iv, p. 429, 1897.

<sup>3</sup> *Jour. of Exp. Med.*, vol. ii, p. 699, 1897.



fever bodies. It should be remembered, however, that the motile colon bacilli and the Eberth bacillus likewise diffuse. The Sanarelli and Eberth bacilli, unlike the colon bacteria, diffuse very rapidly, forming a transparent, almost invisible growth.

The tube medium of Hiss is somewhat similar in composition to that of Stoddart, and gives similar results. It contains in addition one per cent. of glucose. A stab culture is planted in the usual way and set aside at 35° C. to develop. If the organism is motile diffusion takes place, otherwise the growth is confined to the line of inoculation. If the organism produces gas an abundance of bubbles will be formed in from eight to twelve hours. The Sanarelli bacillus diffuses perfectly, and gives rise to much gas, whereas the Havelburg bacillus does not diffuse, but does give rise to gas. The colon bacilli in this medium, as a rule, diffuse readily, and gives rise to gas. The Eberth bacillus will diffuse, but does not produce gas. If this medium is colored with litmus it will serve to indicate acid and gas production as well as motility.

On Elsner's medium,<sup>1</sup> potato gelatin, and potassium iodid, the Sanarelli bacillus failed to grow, although repeated trials were made. The several Eberth cultures gave rise to very small typical colonies, whereas the Havelburg bacillus and the various colon bacteria grew luxuriantly. While the colon bacilli tend to spread on the surface in the characteristic manner, the Havelburg bacillus forms the usual surface pin-head colony. Under certain conditions, as will presently be shown, the Havelburg bacillus does give rise to colon-like spreading colonies.

In bouillon the Havelburg bacillus grows very readily, regardless of the reaction of the liquid. Thus, in an acid bouillon, the acidity corresponding to 20 c.c. of normal hydrochloric acid per liter, it grows just as abundantly as in the alkaline bouillon containing a like amount of normal sodium hydrate in excess of the neutral point. The growth of the Havelburg bacillus, therefore, is always abundant. A thick ring forms on the glass at the surface of the bouillon, and after the lapse of a few days it takes on a yellowish tinge. The scum which forms is not even and continuous, but consists of floating masses. The liquid remains cloudy for one to two weeks, and only a slight deposit forms. Growth does not form in bouillon containing 35 c.c. normal hydrochloric acid per liter.

The behavior of the Sanarelli bacillus in bouillon is, on the whole, markedly different from that of Havelburg. The growth is by no means as abundant. As a rule, no ring or scum forms. A con-

tinuous thin scum may, at times, cover the surface of the liquid, especially when the cultures are allowed to develop at about 25° C. Acid bouillon, containing 10 and 20 c.c. respectively of normal hydrochloric acid per liter, remains perfectly clear, and only a trace of deposit forms. While these two organisms show this difference with reference to acid media, they behave about alike in alkaline media. Thus, both develop in bouillon containing 50 c.c. normal sodium hydrate per liter, forming a slight growth. Neither the Havelburg nor the Sanarelli bacillus liquefies gelatin.

On gelatin plates the Havelburg bacillus presents the one characteristic which distinguishes it from an ordinary colon bacillus. The surface colony does not spread, as is usually the case with colon and Eberth bacilli, but remains as a thick convex, glistening opaque-white pin-head. The deep colonies offer nothing special; they are oval or roundish and yellow, and when ten to fourteen days old they become very dark. When the plates are several days old a strong ammoniacal, fecal odor is noticeable. As in the case of bouillon the Havelburg bacillus will grow on gelatin regardless of the reaction.

The Sanarelli bacillus, as seen above, possesses less vegetative force than the Havelburg bacillus. It will frequently fail to show the slightest growth on gelatin. This is not entirely due to the reaction of the medium. Gelatin containing 10 or 20 c.c. of normal NaOH per liter gives excellent growth in two to three days at about 18° C. In neutral gelatin the colonies are considerably smaller, and in gelatin containing 10 c.c. normal HCl. per liter the colonies are mere points. In gelatin containing 20 c.c. of normal HCl. per liter no colonies develop. The so-called typical colonies develop best at 16° to 18° C. on ten per cent. nutrient gelatin. This should not be too hard, and should have an alkalinity of about 10 c.c. of normal sodium hydrate per liter. On hard gelatin, such as fifteen per cent., and grown at 20° C., the colonies are a typical. A little attention to the temperature and to the composition and reaction of the gelatin will always enable one to obtain typical colonies. To obtain a constant low temperature a special apparatus was devised. In this running water surrounds and cools an inner compartment. By regulating the flow of the water it is possible to maintain any desirable temperature from 15° C. up to that of the room itself.

The deep colonies of the Sanarelli bacillus to the eye appear as mere white points. Under the microscope they are perfectly circular. At first they are light-yellow, coarsely granular, but in a few days they become perfectly opaque, dark brown or black in color. When grown on acid gelatin (10 c.c.

<sup>1</sup> *Zeitschrift für Hygiene*, 8, 159; 21, 29.

normal HCl. per liter) the colonies (atypical) do not become dark, but appear as perfectly circular, light yellow, homogeneous, wax-like bodies.

The typical surface colony of the Sanarelli bacillus appears to the eye like a droplet of boiled starch or mucus. It is thick and convex. They may be perfectly circular, but frequently will show a distinct kidney shape. An opaque, yellowish white nucleus can, as a rule, be seen at or near the center, or in case of the kidney-shaped colony at the hilus. Under the microscope the colony appears almost colorless, or with a central, light-brown tinge. It is finely granular, and the border is sharp, perfectly smooth. The nucleus is opaque, and may be round, but more often is hat-shaped, and has even been compared to Saturn with its rings. In the kidney-shaped colony the crown of the hat projects into, or is turned toward the hilus. On hard or acid gelatin only atypical colonies form. These are very small, raised points usually without the nucleus, and the kidney shape is absent.

In stab cultures in gelatin the Havelburg bacillus grows rapidly and abundantly, and the growth is like that of the colon bacillus. The Sanarelli bacillus grows more slowly along the entire line of inoculation, and there is very little tendency to spread on the surface except when the temperature is about 25° C. The growth, on a whole, resembles closely that of hog-cholera.

On agar the two organisms likewise show marked differences. In ordinary streaks on inclined agar the Havelburg bacillus (like the colon) forms at 39° C. a thick, opaque, white growth. On the other hand, the Sanarelli bacillus (like the Eberth bacillus) under the same conditions forms a thin growth, which in transmitted light is almost perfectly transparent. When cultures on inclined agar are grown at 16° C. they present an entirely different appearance. The Sanarelli bacillus forms a convex, thick, moist, slimy growth. This is perfectly homogeneous, transparent, and mucous-like in appearance. It resembles the well-known cultures of Friedlaender's bacillus. The Havelburg bacillus at 16° C. forms thick, opaque, raised growths, which show a distinct zooglea character.

When isolated colonies are obtained on inclined agar they will appear thin and transparent or thick and slimy, according to the temperature at which they develop. When developed for twenty to twenty-four hours at 39° C. the colonies are thin, flat, grayish, transparent, and circular. If they are now placed at 16° C. growth at the edge of the colony will continue, but it will take on the thick, slimy, character already referred to. In two or three days the colonies present a peculiar appearance—a thick,

slimy, opalescent ring, inclosing a thin, flat area. In time the slimy growth may invade the central area and cover it up. The colony then appears as an opalescent, mucous-like drop, and eventually takes on a pearly luster. When several colonies are close together the slimy growths may coalesce and give rise to rivulets. Eventually the outer slimy border becomes transparent, and the original colony is seen as an opaque body embedded in it. This change can be hastened by placing the culture in an incubator for twenty-four to thirty-six hours.

These characteristic growths of the Sanarelli bacillus on gelatin and on agar are always obtained if the conditions mentioned are adhered to. The two extremes of temperature are necessary, as well as a distinctly alkaline medium.

Marked differences between the organisms are also observed in their effect on animals. When injected intraperitoneally into guinea-pigs 1 c.c. of the twenty-four-hour bouillon culture of the Havelburg bacillus grown at 39° C., will invariably kill in less than twenty-four hours, more often twelve to fifteen hours. The bacillus is always present in the animal in abundance. Injected subcutaneously it produces a local abscess, and the animal recovers. On the other hand, the Sanarelli bacillus under like conditions is fatal in from five to seven days, although it is possible to have cultures which will kill in less than twenty-four hours. The bacillus is present in relatively small numbers. When injected subcutaneously, unlike the Havelburg bacillus, it proves fatal. The normal serum of man, horse, rabbit, guinea-pig, etc., promptly agglutinates the Sanarelli bacillus, and has no effect on that of Havelburg.

The foregoing comparisons of these two organisms clearly indicate that they are two distinct species.

## II. RELATION OF THE HAVELBURG BACILLUS TO THE COLON GROUP.

It may be well to state incidentally that this organism was isolated by injecting into guinea-pigs from 1 to 2 c.c. of the stomach contents of yellow-fever cadavers. It was present in each one of the twenty-one cases thus examined. In his published communication Havelburg called attention to the fact that his organism may be confounded with the bacillus coli communis, and that it is difficult to differentiate these two bacteria.

The distinctions between the two organisms, as laid down by Havelburg, are very slight and wholly insufficient. Thus, the Havelburg bacillus when very virulent shows the bipolar stain, whereas the colon bacillus did not show this behavior. Again, the Havelburg bacillus was non-motile, whereas the colon bacillus was said to be very motile. On gela-

tin the former gives rise to pin-head surface colonies, whereas the latter forms smooth plaques. On potato the former develops moderately, forming a grayish growth, whereas the latter gives an abundant brownish growth. Lastly, the colon bacillus is said to be less virulent than the Havelburg bacillus.

The presence or absence of the bipolar stain is of very little value in differentiating organisms. Almost without exception a bacillus when very short will, on slight staining, give a bipolar stain. The short form of the colon bacillus is no exception to this rule.

The motility of the members of the colon group, as is well known, varies considerably. While some may be exceptionally motile, there are others that are less motile, or even those that possess no motion. Some authors as Kruse (Flügge, "Die Mikroorganismen," 1896) proposed to designate the non-motile colon bacteria as the *B. aerogenes*. In other respects the *aerogenes* and colon group are identical. The motility of an organism is so readily influenced by unfavorable media that it is a matter of no surprise to find colon bacilli of diverse origin showing a difference in motion.

The difference observed in the growths of the two organisms on gelatin plates is such as may be expected between a non-motile and a motile organism. The *aerogenes* group, as a rule, gives rise to raised pin-head or drop-like surface colonies, whereas the motile colon or typhoid bacillus spreads out in the characteristic thin plaque. On growing the motile colon bacillus, under conditions which will lessen the motility, the surface colonies cease to spread and become hemispherical. The Havelburg bacillus, when grown on fifteen-per-cent. gelatin at 16° C., forms large, thin, spreading, surface colonies in size, shape, and appearance identical with the surface colonies of the Emmerich and other colon bacilli. The deep colonies likewise agree perfectly. Here, as in the case of the Sanarelli bacillus, temperature, consistency, and reaction of the medium exert a marked influence on the form of the surface colony.

The distinction between the Havelburg and colon bacilli in their growth on potato has not been verified. On the contrary, the comparison of the several cultures sent by Havelburg with six colon bacilli of diverse origin showed a marked similarity in color. A faint brownish or yellowish color was given by all. The Havelburg bacillus in general grows more rapidly than the ordinary colon bacillus, and hence the growth on potato is thicker and somewhat dryer than that of the colon bacillus.

The Havelburg bacillus would seem to be more virulent than the ordinary colon bacillus. One-half c.c. of a bouillon culture grown for twenty-four

hours at 39° C. when injected intraperitoneally into guinea-pigs will, as a rule, produce death in from twelve to twenty-four hours. The ordinary colon bacillus requires a larger dose, and even this is not always fatal. On the other hand, certain varieties of colon bacillus, when recently isolated, do possess marked virulence. Thus, Emmerich<sup>1</sup> found that his bacillus intraperitoneally killed guinea-pigs in from eight to ten hours. Coppola,<sup>2</sup> studying the same organism, found that subcutaneous injections killed guinea-pigs in twelve to thirty hours. The *B. cavica* of Brieger is another variety that at one time was very pathogenic to guinea-pigs.

The following experiment was made with old cultures which have been cultivated in this laboratory for ten years. The Emmerich bacillus was brought from the Berlin Hygienic Institute in 1888. The *B. cavica* was obtained about the same time from Král in Prague. Full-grown guinea-pigs received intraperitoneal injections of 1 c.c. of the twenty-four-hour bouillon cultures grown at 39° C.: Guinea-pig No. 1 received the Havelburg bacillus, died in twenty-three hours; guinea-pig No. 2 received Emmerich's bacillus, died in fifteen to eighteen hours; guinea-pig No. 3 received *B. cavica*, died in twenty-six hours; guinea-pig No. 4 received *B. coli communis*, apparently no effect even five days later. The symptoms produced in the first three were exactly alike. The rectal temperature for some time before death in all three animals was 29° to 30°. The post-mortem appearances were likewise similar. There was intense congestion of the abdominal vessels. A white, fibrinous exudate covered the liver. Considerable yellowish or bloody effusion was present in the abdominal cavity. The bacteria, alike in appearance, were exceedingly numerous on the serous surfaces.

It is evident from this experiment that the Havelburg bacillus is not more virulent than certain colon bacteria which have been kept in artificial cultivation for ten years.

On the other hand, the Havelburg bacillus, like the colon bacillus, is not markedly virulent when injected subcutaneously into guinea-pigs or rabbits. At present the injection of one c.c. subcutaneously rarely causes death in guinea-pigs. As with the colon bacillus a small abscess forms at the place of inoculation. Havelburg, moreover, states that his bacillus readily loses its virulence. This is true only to a limited extent, as seen in the above experiment.

The effects observed in guinea-pigs after injection of the Havelburg bacillus, as shown above, agree very closely with those produced by the colon ba-

<sup>1</sup> *Archives für Hygiene*, 3, p. 201, 1885.

<sup>2</sup> *Zeitschrift für Hygiene*, 2, p. 328, 1886.



cillus. The apparent vomiting caused by the former was observed in the above experiment with *B. cavicida* and Emmerich's bacillus. It has also been observed by Coppola in his studies on the Emmerich bacillus. This symptom is not one of vomiting, but is rather due to lack of oxygen.

The resistance of the Havelburg bacillus is the same as that of the colon group. Comparisons between this and other organisms will be given in the third part of this paper.

The facts mentioned above, taken in connection with cultural characteristics, as described in the preceding part, clearly indicate that the Havelburg bacillus belongs to the colon group of bacteria. A careful comparison was made between the Havelburg bacillus and six colon bacilli, and the results obtained in every respect confirm this statement.

The greatest similarity exists between Emmerich's bacillus (*B. Neapolitanus*) and that of Havelburg. They are about the same in form and size, and are both non-motile. The cultural appearances on the ordinary media are such as to render it difficult to distinguish between the two organisms. The Emmerich bacillus, especially when grown in acid bouillon for some time, gives rise to colonies on gelatin plates, which are identical with those of Havelburg. The gelatin plates of both organisms have the same ammoniacal fecal odor. When grown on Elsner's medium, the two organisms give rise to colonies that have the same form and odor, and the surrounding gelatin in both cases is covered by a dark refracting film. Likewise the growths on Hiss' tube medium and on Stoddart's medium present the same characteristics.

It is evident that the Emmerich bacillus, which received a passing notoriety in connection with the etiology of cholera thirteen years ago, is very closely related, if not identical, with the Havelburg bacillus.

The latter may consequently be considered as a non-motile colon bacillus, modified perhaps by a more or less prolonged contact with the hydrochloric acid of the gastric juice. It follows, therefore, that the Havelburg bacillus can in no wise be considered as the cause of yellow fever.

(To be continued.)

**Vacancies in the Marine Hospital Service.**—A board of officers will be convened at Washington, Wednesday, November 9, 1898, for the purpose of examining candidates for admission to the grade of Assistant Surgeon in the United States Marine Hospital Service. It is desired that applications for this examination be made before November 1st. For further information or for invitation to appear before the Board of Examiners, address Supervising Surgeon-General, United States Marine Hospital Service.

## WAR ARTICLES.

### A TRUE PEN-PICTURE OF CAMP WIKOFF.

[Specially Reported for the MEDICAL NEWS.]

By WILLIAM BROADDUS PRITCHARD, M.D.,  
OF NEW YORK.

ARMED with numerous letters of introduction as the special representative of the MEDICAL NEWS, I visited Camp Wikoff, at Montauk Point, on Sunday last, and spent the entire day in observations and investigations regarding the general situation, and especially with reference to the health and comfort of the soldiers. My letters of introduction were in every instance acknowledged most courteously, and I was afforded every facility for observation and the acquisition of information in detail. All questions were answered frankly and without evasion, and in not a single instance within my knowledge was any attempt made to conceal or disguise the truth. So uniform and conspicuous was this exhibition of courtesy and frankness as to deserve more than mere passing mention. It affords a guarantee of the accuracy of the information obtained and the facts observed which are herewith submitted.

**The Location of the Camp.**—The camp stretches in scattered and detached villages of tents over several miles of grass-covered hills swept on all sides by fresh breezes from either the ocean or the sound. The grass is short and thick, and covers the earth as though with matting, affording excellent roadways, except in the valleys and in occasional brackish pools, through and across which roadways have been built. The fields and camp-streets are free from dust. The artificially-made roadways, except when the dust is allayed by sprinkling-carts, are continuously enveloped in clouds of stifling thickness, so continuous is the travel over them. The superficial soil is of rough gravel and sand. There is, according to Colonel Forwood, under this and very close to the surface a thick layer of clay of a type hygienically of great value in that it permits percolation and filtration very slowly. Under this is another layer of sand and gravel, and lower still another layer of clay. Surface-filtrations, drainage, and purity of well-water supply are ideally attainable with such conditions of soil. There is an abundant water-supply from a well equipped with a modern pumping outfit, furnishing 700,000 gallons of pure water daily, which is distributed over the entire camp by a system which is as near perfect, both mechanically and hygienically, as is possible of attainment. The camp is accessible to an unlimited base of supplies, with facilities for transportation by both land and water, the schedule time from New York City by train being less than four hours, and by boat not more than eight or ten. Such are the natural conditions present. How far they have been utilized, how far neglected and abused remains for further comment and consideration.

**The Sick at Camp Wikoff.**—There are about 20,000 troops at Camp Wikoff. Of this number about 10,000 are sick. This is the estimate, roughly approximated, as stated by Surgeon-Major Brown. The sick are officially classified under three heads: (1) those who are danger-

ously ill, who are in the general hospital or the detention hospital; (2) convalescents, who are also in the general hospital or who are discharged on furloughs and leave the camp altogether, and (3) walking cases, or "office patients," so to speak, who are not ill enough to go to bed or to the hospital, but who are not well enough for regular duty. Of the seriously sick there are nearly 1100 in the general hospital, and about 600 or 800 in the detention hospital. The very large number of men who are on the daily "office-patient" sick-list seriously handicaps the efficiency of the entire camp. These men are not able to do picket or police duty, or even to serve as orderlies or on special details. In consequence the relatively small number of men who can be called upon for these various duties are overworked, and are unable to attend to their work efficiently. In one battalion of the 24th Infantry only one officer is well enough to perform his duties, and out of the entire battalion only eight well men could be furnished in compliance with an order for a special detail of twenty-four men. How important these various duties are may be readily understood from the statement that they include the policing of the camp and hospital streets, the tents and latrines, the transmission of orders from point to point, the carrying of food and supplies in small quantities, assistance in transferring the newly arriving sick soldiers from the landing to the hospital, manning the ambulances, and a thousand and one other duties. The entire camp is short-handed, and the effect is felt in every department. This is true in spite of the fact that the camp employs more than 2000 laborers, teamsters, carpenters, and various other employees as extra men. It is for the purpose of overcoming this deficiency and of relieving the overworked, many of whom have become ill, that a movement is on foot to add to the camp one or two regiments from other posts which have not been decimated by disease.

*Shall Camp Wikoff Be Abandoned?*—The question as to the abandonment of Camp Wikoff hinges, of course, as has been abundantly intimated in both the lay and medical press, upon the probable development of typhoid infection of the water-supply. I discussed this aspect of the subject with Dr. Nicholas Senn, Colonel Forwood, and Major Brown. In answer to my inquiry Dr. Senn stated that he had nothing further to add and nothing to withdraw from the opinions which he had already expressed on the subject which have been widely, though not altogether correctly, disseminated through the lay press. He believes that infection of the existing water-supply is absolutely inevitable. How long it will take for this to occur is largely a matter of conjecture. It may take a week, or three weeks; it may exist already, or occur within a day or two. The continuance of existing conditions makes it an absolute certainty sooner or later. In this opinion Colonel Forwood concurred. This infection of the camp with typhoid fever is not in any way a reflection upon the wisdom or skill exhibited in selecting this camp. Typhoid fever, to a greater or less extent is an inevitable accompaniment of all military camps. The United States Army records will show that even two or

three companies in garrison for as long as a year, will lose one or two men from typhoid fever. The larger the camp the greater the proportionate number of typhoid cases. Colonel Forwood does not believe that the official water-supply of Camp Wikoff is at present infected, and he further believes that the geologic conformation of the strata met in boring the well used, is such as is most favorable to the preservation of the purity of the water.

Major Brown, when asked as to the possibility of typhoid infection from other sources, such as dust from the roadways, soil pollution on the surface, fly infection from the latrines, etc., stated that every intelligent precaution is being observed to guard against such sources of possible danger. Disinfectants are in use every where throughout the camps, in the latrines, and especially in the hospital wards and streets. Flies are not numerous, a fact which I personally noted. Surface-soil pollution has been provided against by orders, violation of which is met with immediate arrest and imprisonment. A laborer was under arrest at the time of my visit for just such an offense.

I was greatly pleased to learn in this connection from Colonel Forwood that the impression created by the lay press that the regular army medical officers are not in agreement with Dr. Senn in his opinion as to the danger of a typhoid epidemic is absolutely false; on the contrary, he and Dr. Senn are in exact and harmonious accord on this subject.

*Hospital Facilities.*—There are two hospitals in camp, the general and the detention. The general hospital as it exists to-day is a marvel of perfection, and reflects the highest credit upon the efficiency of Colonel Forwood who planned its arrangement and carried out personally its establishment and equipment. To those unfamiliar with the difficulties and obstacles encountered a full appreciation of the success attained is impossible, but even the most captious can find to-day little if anything to criticize or condemn. Colonel Forwood has been most ably and energetically aided in the entire work by Surgeon-Major Ira C. Brown, in my humble opinion the hardest worked and most patient bearer of many burdens in all Camp Wikoff. I sat in Major Brown's tent for nearly two hours, and during that time by actual count he transacted business with forty-seven different people. A mother wished to find her sick soldier boy; a newspaper reporter wanted a bit of information; a nurse or orderly brought an order to be signed for medicines or delicacies for the sick; a sick furlough was wanted by this one; another wanted a permit to remove one of the dead—so they came one after the other, sometimes several at once. All were treated courteously, every requisition for the sick was granted at once, there was no abruptness or impatience of manner or speech. I found myself wondering again and again how it could possibly be done. Incidentally Major Brown found time in the occasional intervals to give me much information of interest and value. The hospital, he said, was fully equipped with physicians and nurses. One physician, in fact, a volunteer, unable to secure an assignment in the wards, had taken off his coat and done yeoman's service

in the diet-kitchen, rendering most valuable aid to the sick from that position. All hospital supplies, drugs, and appropriate food, and even delicacies for the sick, were on hand in abundance. I, myself, had an opportunity to verify this statement through the requisition clerk of the pharmacy department, who later stated to Colonel Forwood in my presence in presenting a requisition for some twenty or thirty articles the supply of which had been that day mostly exhausted, that he had everything else which was needed, and in abundance.

Major Brown spoke very appreciatively of the work done and the aid rendered by the Red-Cross Society and the Women's National War Relief Association. Not the slightest trace of official jealousy was apparent; on the contrary, his tribute was most generous and frank. Of the sick by far the largest number were cases of malaria; they outnumbered all the other sick, including the "office patients," ten or even twenty to one. The worst and most intractable cases of malaria have been found in the soldiers from Tampa. Many of these cases passed into a typhoid state but were not true cases of enteric fever. True typhoid fever was steadily decreasing both in the number of cases and in the malignancy of the type. The death-rate in the hospital was falling daily. In nearly all cases of both typhoid and malaria the disease germs were present in the system before the soldiers had landed. Much of the fatality from pernicious malarial fever in Cuba and elsewhere has been due to the fact that a great many of the surgeons, especially the volunteers from the New England and Northern States, were not familiar with the heroic treatment necessary. They gave 3 and 5, and sometimes 10, grains of quinin every two or three hours, when they should have given 20 grains at a dose, or even more until the disease was checked. To those who have practised medicine North and South, and who are familiar with the difference between the malaria of the South and the so-called, or it may be actual malaria of the North, this statement possesses a peculiar significance. It also explains the frequency of relapses and the increased virulence of the malarial poison from a prolonged stay and uncontrolled development in the system.

Of the detention hospital, its equipment, efficiency, and management, I can only report at second hand, as I did not visit it at all. I was reliably informed, however, that it is at present as free from all openings for criticism as the general hospital. This was not the case, in one respect at least, a short time ago, since a most serious mistake existed in the appointment as chief diagnostician of a medical man whose qualifications were pitifully deficient. Of this appointee I was told, he had never seen a case of yellow fever in his life. His successor is, I understand, a most capable and efficient medical officer, possessing special qualifications for his post.

*The Landing of Soldiers.*—Nearly all the troops coming to Camp Wikoff arrive on transports and are landed at one of the two docks, both of which are near the railroad station. It was here that I found most opportunity for criticism, and much, very much to condemn. Thankful indeed should be the returning soldier who passes this Rubicon with safety or even with life. There are two docks, the

one owned or controlled by the railroad, near the depot, accessible with some difficulty, the approach being over a network of car-tracks and down a rather steep embankment; the other, perhaps a quarter of a mile distant, much more advantageously located and easy of approach. The latter dock is private property, but its importance and advantages being seen at once by Dr. Kinyoun of the Marine Hospital Service, it was at his suggestion seized and made the headquarters of the Marine Hospital Quarantine Service, which is represented by Drs. Magruder, Kinyoun, and Brunner. These three gentlemen, amply equipped with able assistants, ten in number, and experienced attendants to the number of twenty-four, have charge of all water quarantine. Their equipment is superb and the service has been absolutely without reproach except from one source, which in reality reflects the more credit upon them, a matter to which I shall later refer at more length.

A lookout watches for an expected transport. As soon as the vessel is sighted in the offing Dr. Magruder goes out and boards and inspects her. All passengers to be landed are put through an elaborate routine of disinfection, which process includes, of course, all equipments, clothing, and, indeed, everything which is to be brought on shore. A specially designated medical officer is then notified that the transport is ready to be unloaded, being notified at the same time of the number of sick on board. This medical officer is supposed to remain on duty at the dock and superintend the landing of the sick, providing fresh milk, soup, necessary drugs and stimulants, as well as stretchers and ambulances. An officer from the Quartermaster's Department is also on duty here. These sick men are carried at once to the detention hospital. Not knowing exactly when a transport is to arrive or how many sick are on board, each arrival involves a special order for supplies, ambulances, etc., through various channels, with all the cumbrous details of red-tape routine, involving invariably some delay. Such delay, together with inefficiency in providing for the situation, has cost more than one life, one poor fellow recently dying on the dock for the lack of a stretcher and a little whisky. If the medical officer in charge had had on his person for this poor fellow's use one-tenth of the whisky which he had in his person one life at least could have been saved.

The sufferings and hardships of *privates* on these transports, as seen by eye-witnesses who told me of them, almost exceed the limits of human belief. Ships have come in, notably the "Mobile" and "Catonia" loaded with desperately sick men piled like baggage in the hot, stifling hold, with only army rations for food and not enough of that, rotten water, no medicines, and not even a surgeon in attendance, while the officers, to their everlasting shame and disgrace be it said, have come in healthy, well-kept, and attended by servants, fed on the best food, including fresh beef and vegetables, and with not only water but in some instances ice. My informant, who mentioned only what he saw, told me that no less than sixteen cases of insanity had been noted by him among the returning soldiers due to suffering and starva-



tion. No sick-records accompanied the men, not even the diagnosis. In many cases the men did not even know their doctors. Men sick with malaria, typhoid, dysentery, and sometimes yellow fever, were all bunched in together and the diagnosis could only be made after some days of observation in the detention hospital. This fact, by the way, explains why it has been impossible to send the typhoid or any other patients directly into the hospitals of New York, Brooklyn, Boston, Philadelphia, and other cities. The diagnosis had to be made in the detention hospital. Many of these men killed themselves through a ravenous indulgence, half starved as they were, in the sandwiches and soups which they greedily ate, helping themselves without knowing the danger and without being guarded from it by careful discrimination and oversight. Many of these unfortunate conditions are attributable to gross carelessness of the officers under whose supervision the transports were unequally loaded in Cuba. Some vessels with a capacity for 350 brought only a few officers and attendants, while others were badly crowded.

It is self-evident, of course, that sick men in such quarters and under such circumstances should be landed as expeditiously as possible. Even an hour's delay might, and often doubtless did, mean the death of a man. A due appreciation of this necessity should have led, one would think, to the observance of every precaution in order to avoid delay, and yet, as a matter of fact, no vessel has been unloaded yet without the loss of several hours of valuable time unnecessarily. I myself was witness to this fact. The "Roumania" was sighted early Sunday morning in the bay. Dr. Magruder went out and boarded her. At 10 o'clock he notified the proper authority that the troops could be landed. It was four o'clock in the afternoon before she was brought to the dock. She had on board 660 soldiers, more than 200 of them sick. A part of the delay was due to slowness in filling the requisition for milk. This was not the fault of the officer in charge, however. Two hours more were lost hunting for the medical officer, who was finally found, I was told, in a privy asleep. It was expected that all the soldiers would be landed by ten o'clock that night. To some of them that ten-hours' delay meant death. In some reliably reported instances—one was mentioned to me specifically by an eye-witness—the landing of several hundred sick and starving men was delayed for hours by the inhumanity of the officers on board in insisting that they be disinfected and allowed to land first. The colonel of the regiment had to exercise his full authority to control a condition of almost open mutiny among his officers. There were, of course, brave, humane, and kindly officers—officers who gladly sacrificed their own comfort for the welfare of their men. They were, in fact, in a great majority, but the brutes were far too numerous for the honor and good name of our Army. It is to be hoped that this particular matter will occupy the closest attention of the proper investigating authorities. If one-tenth of what I was told is true, and I have no reason to doubt one word of it, more than one officer, regular and volunteer, should have his straps torn from his shoulders and his sword broken.

## A REFUTATION OF THE FALSE STATEMENTS CONCERNING CAMP WIKOFF.

[From Our Special Correspondent.]

CAMP OF THE ROUGH RIDERS, CAMP WIKOFF,  
MONTAUK POINT, L. I., September 6, 1898.

HAVING been at Montauk Point for more than two weeks, and having carefully inspected every part of the encampment on my own account, and not having seen any daily papers, I was horrified to read a day or two since that this was indeed a pest-infected camp, and that it was only a question of a few days before we should all be occupying six feet of earth on the Golgotha on the hill near the general hospital.

I started for this sick bay in fear and trembling; its condition must be beyond words, the death-rate appalling! I shuddered as I passed a water-pipe containing the death-dealing fluid told of in the papers, and made a long detour to avoid one of the small ponds laden (as I had read) with malarial germs which were far more deadly than any we had gotten into our systems in that wretched Cuba. I had heard from the mother of a 71st New York boy that he had had nought but coffee and hardtack at Col. Forwood's hospital, so I filled my saddle-bags with extract of beef, jams, and marshmallows. This may seem a curious mixture for a physician to take to the sick, but another mother had brought this combination to the men in our regimental hospital, and complained bitterly that my friend, Dr. Forwood, had not allowed her to distribute them at his place, for, she said, "several poor sick fellows of the 33d had written friends that they were not permitted these and such delicacies." The actual conditions which I found at the general hospital I shall give later in this letter.

To one who is familiar with this encampment the alarming reports which certain papers have sent out are little short of mendacious. Families all over the country are in a panic, and terrible and unnecessary suffering has been caused. Poor people have spent their little savings and been led into debt to pay their way from far distant points to rescue their sons from the death and starvation which they had read was encompassing the boys here. General Wheeler told me of a case of an old couple who had come several thousand miles and brought with them a little bag of things for their starving boy. Their starving boy was, as a matter of fact, making a good recovery in the hospital.

I now propose to give a plain and absolutely just account of matters here. I hope to show how little truth there is in all these wild stories, and incidentally how unjust are the criticisms of Dr. Forwood.

*A. The Situation of the Camp.*—This was decided (1) after careful consideration of the climate and weather prevalent here at this time of the year, and from this standpoint the decision was a wise one. *It has rained one day in the last twenty.* (2) After a thorough investigation of the geological formation, with reference, of course, to the water-supply. This island lies upon what is known as the Potomac beds, the strata consisting of alternate layers of clay, gravel, and sand, extending down to the rock. It goes without saying that this forms an

ideal combination for a pure water-supply. An examination of the water made *before* the final decision was made showed that it contained neither limestone, sulphur, gypsum, nor salt. The artesian well from which our water is taken was sunk to a depth of from fifty-five to sixty feet; that is to say, the six-inch pipe goes to that depth. A consideration of the strata shows that any infected water which might percolate to that depth must have been cleared of its impurities. The newspapers have had much to say about the small ponds which dot the surface here. These, of course, have a clay bottom through which the rain-water does not percolate. It is practically all evaporated. The water here is the same used all over Long Island, and I have never heard that it is poisonous hereabouts. The impression has been given by some papers that we are drinking the water of the lake on the right near the station. One correspondent sent by a certain "public irritator" gravely stated that he saw men washing their clothes and watering their horses in the fount of our water-supply; and this grossly ignorant statement I have heard quoted time and time again.

The ground here becomes dry surprisingly quick after a rain; there is always a cooling breeze, and a physician who has practised in this immediate section for twenty years tells me there is very little if any malaria here, and finally, what the *New York World* is pleased to call the swamps "about which our brave soldiers are encamped" are, as I have shown, absolutely harmless little surface pools. So much for the situation of this much-abused camp. General Wheeler told me, and gave me permission to say so, that he had never seen nor could he think of a more ideal situation for a camp.

*B. The General Hospital, the Death-rate, and the Care Received by the Sick.*—There has been at times a lack of cots, *but no patient has ever slept on the bare floor.* Mattresses there have always been in plenty. I have seen the hospital when it contained no less than 1600 sick; at such a time there has been here and there a commodore which should have been emptied; there have been men dying without a woman's hand to soothe (women's hands are always supposed to soothe), but who were unconscious and beyond any human power to help. I have heard men complaining that they were not immediately waited upon, which is not to be expected in such a huge place, *but* I have never seen any one really neglected. I have seen distracted parents and friends bitterly complaining that they could not find some sick man. For this Dr. Forwood and Dr. Brown have been abominably abused. The parents and friends did not know that many men have been brought to Dr. Forwood and to Dr. Brown either totally or partially unconscious and without even a piece of paper to establish their identity. In this connection I am convinced that at first there was a sad lack of method and care in keeping the records. But this has been remedied.

As to the death-rate. This has been grossly and shamefully exaggerated. Up to 3 P.M. Sunday, September 3d, 6040 cases had been received. There had been up to the same hour 150 deaths; making a death-rate of exactly two and one-half per cent. Surely this

should satisfy even the most fault-finding; it is very small in any case, but incredibly small when the condition of the men when received is considered, and bears a striking tribute to the care received in the hospital.

As far as the condition of the sick men in the regiments goes, their state could be and is being improved. Division hospitals are now established (they should have been erected before) and the men of the different divisions will soon be as well cared for as the sick in the big hospital.

This brings me to the question of regimental hospitals; and whatever may be the objection to them in the field *they should be a part of the medical service of every regiment when encamped for any length of time.* With the permission of Colonel Roosevelt I established one for our regiment, and I do not hesitate to say that it has been nothing short of a blessing to the sick, and we have seen a number of men really restored to health through the care and nursing here received. Our treatment has consisted largely if not entirely in careful dieting. The Cuban experience left many with stomachs and intestinal canals in a frightful state. The general health of this regiment is more than satisfactory, and indeed, that of all the troops quartered here is surprisingly good.

And so I have given you the facts about things here. I trust what I have written will serve to stop, in part at least, the panic about the "suffering and starvation of our poor troops," about which the papers have so much to say. I might add that I had a long interview on this whole matter with Dr. Forwood, and was also most cordially received and given a long talk by that most courteous of old soldiers, General Wheeler.

FRANK DONALDSON, M.D.,  
Assistant-Surgeon, U. S. V.

#### GENERAL STERNBERG'S ANSWER TO HIS CRITICS.

*To the Editor of the MEDICAL NEWS.*

MY DEAR SIR: I am very much occupied with important official business in connection with the care of our sick soldiers in all parts of the country, but will take a little time to give you my opinion with reference to Montauk Point.

I am responsible for the selection of Montauk Point as a camp for our returning soldiers, and I do not believe that another place could have been found on the Atlantic Coast presenting so many advantages. We have over five thousand acres of land, never before occupied by camps or by human habitations. The soil is covered by a good growth of grass and affords excellent camping-ground. We get good water from wells, which are sufficiently removed from the camps to prevent any possibility of fecal contamination. The Point is swept by the ocean breezes and has all the advantages of a seaside resort. There is a fine sheltered harbor where our largest ships can anchor, and there is a line of railroad giving direct communication with Brooklyn and New York. No doubt this camp, if occupied for some time without proper regard to essential

sanitary precautions, would become infected with typhoid fever as other camps have been.

If the recommendations, which I made in my Circular Letter of Instructions, April 25, 1898, had been followed at Camp Thomas, Camp Alger, and other camps where typhoid fever has prevailed, I believe that the number of cases of this disease would have been comparatively small. I believe, with other sanitarians, that typhoid fever is a preventable disease, and long since in my prize essay on "Disinfection and Individual Prophylaxis against Infectious Diseases," published in 1886, I insisted upon the disinfection of the excreta of patients with typhoid fever in the following words:

"The dejections of patients suffering from an infectious disease should be disinfected before they are thrown into a water-closet or privy vault. This is especially important in cholera, typhoid fever, yellow fever, and other diseases in which there is evidence that the infectious agent is capable of self-multiplication, in suitable pabulum, external to the human body."

In my "Manual of Bacteriology" this recommendation is repeated, and detailed instructions are given with reference to the disinfection of excreta. I also call attention to the value of quicklime as a disinfectant, as follows:

"Experiments made in Koch's laboratory in 1887 by Liborius led him to place a high value upon recently burned quicklime as a disinfectant. More recent experiments by Jäger, Kitasato, Pfuhl, and others have shown that this agent has considerable germicidal power in the absence of spores, and that the value which has long been placed upon it for the treatment of excrementitious material in latrines, etc., and as a wash for exposed surfaces, is justified by the results of exact experiments made upon known pathogenic bacteria. The germicidal power of lime is not interfered with by the presence of albuminous material, but is neutralized by phosphates, carbonates, and other bases, and by carbonic acid.

"In the writer's experiments a saturated aqueous solution of calcium oxid failed to kill typhoid bacilli; but when suspended in water in the proportion of 1:40 by weight this bacillus was killed at the end of two hours. Anthrax spores were not killed in the same time by a lime wash containing twenty per cent. by weight of pure calcium oxid. According to Kitasato, the typhoid bacillus and the cholera spirillum in bouillon cultures are destroyed by the addition of one-tenth per cent. of calcium oxid. Pfuhl experimented upon sterilized feces to which pure cultures of the typhoid bacillus or cholera spirillum were added. The liquid discharges of patients with typhoid fever or diarrhea were used for the purpose. He found that sterilization was effected at the end of two hours by adding fragments of calcium hydrate in the proportion of six per cent., and that three per cent. was effective in six hours. When a milk of lime was used which could be thoroughly mixed with the dejecta the result was still more favorable. A standard preparation of milk of lime containing twenty per cent. of calcium hydrate killed the typhoid bacillus and the cholera spirillum in one hour when added to liquid feces in the proportion of two per cent.

"The experiments with this agent show that time is an

important factor and that much longer exposures, as well as stronger solutions, are required to destroy pathogenic bacteria than is the case with chlorid of lime. For this reason we still give the last-named agent the preference for the disinfection of excreta in the sick room. But in latrines the time required to accomplish disinfection is of less importance, and we are disposed to give recently burned quicklime the first place for the disinfection of excreta in privy vaults or on the surface of the ground. It may be applied in the form of milk of lime, prepared by adding gradually eight parts, by weight, of water to one part of calcium hydrate. This must be freshly prepared, or protected from the air to prevent the formation of the inactive carbonate of lime."

In the "Manual for the Medical Department," which is supplied to every medical officer in the service, I have introduced the following paragraphs:

"121. Sulphate of iron and other cheap antiseptics and deodorants may be used when necessary. But the necessity for their use is a reproach upon the sanitary police of a post, and should only be required under exceptional circumstances. The alvine discharges of healthy persons do not require disinfection, and when properly disposed of do not require treatment with any chemical agent whatever. If water-closets or earth-closets are offensive, this is due to faulty construction, to insufficient supply of water or dry earth, or to neglect of ordinary cleanliness. The attempt to remedy such defects by the systematic use of antiseptics is expensive and unsatisfactory in its results. The same is true of foul drains, bad-smelling urinals, accumulations of garbage, etc. The proper remedy for such conditions is cleanliness and strict sanitary police.

"122. When accumulations of organic material undergoing decomposition cannot be removed or buried they may be treated with an antiseptic solution, or with freshly burned quicklime. Quicklime is also a valuable disinfectant, and may be substituted for the more expensive chlorid of lime for disinfection of typhoid and cholera excreta, etc. For this purpose freshly prepared *milk of lime* should be used, containing about one part, by weight, of hydrate of lime to eight of water.

"123. During the prevalence of an epidemic, or when there is reason to believe that infectious material has been introduced from any source, latrines and cesspools may be treated with milk of lime, in the proportion of five parts to one hundred parts of the contents of the vault, and the daily addition of ten parts for one hundred parts of daily increment of feces."

Having thus pointed out what should be done, and having authorized the purchase of quicklime for disinfecting purposes in unlimited quantities at Montauk Point and at our other camps, I am not responsible if there has been a neglect to carry out those sanitary measures which are essential for the preservation of the health of troops in camp. All experienced officers of the line, and medical officers, know that it is dangerous to remain for a long time on one camping-ground. In Circular No. 5 from my office, dated August 8, 1898, I say:

"The attention of medical officers is invited to Circular No. 1 from this office, dated Washington, April 25, 1898.



"The extensive prevalence of typhoid fever in camps of instruction indicates that the sanitary recommendations made in this circular have not been carried out. If medical officers have failed to make the proper recommendations as indicated, the responsibility rests with them. If the recommendations have been made and not acted upon by those having authority in the various camps, the responsibility is not with the Medical Department, but these recommendations should be repeated and commanding officers urged to move their camps at frequent intervals and to maintain a strict sanitary police."

At Montauk Point there is plenty of room and there will be no excuse if the camps are occupied for so long a time as to endanger the health of the troops through typhoid infection. Moreover, the regiments now there are some of them being mustered out and others have been ordered to return to the military posts occupied by them before the war. We are doing our best to take care of our sick, and, at the same time, to prevent the extension of infectious diseases at Montauk; and, as I have already stated, I consider this an ideal place for the purpose.

Very truly yours,

GEO. M. STERNBERG,  
Surgeon-General U. S. Army.

WAR DEPARTMENT,  
SURGEON-GENERAL'S OFFICE,  
WASHINGTON, D. C., September 4, 1898.

#### BLOOD EXAMINATIONS AT CAMP WIKOFF.

By J. RICHARD TAYLOR, M.D.,  
OF SAG HARBOR, N. Y.

HAVING heard many conflicting accounts of diseases to be found at Camp Wikoff I spent almost a week at the general hospital there recently by invitation of Colonel Forwood, Assistant Surgeon-General United States Army, and made microscopical examinations of the blood of such patients as were placed under my care for that purpose. All who were examined had been thoroughly exposed to malaria and most of them had received more or less quinin. The examinations were all made with fresh blood and from 3 P.M. Tuesday until 6 P.M. Saturday forty-three were examined for malaria and one for tuberculosis. The following list shows twenty-four cases in which the plasmodium was found in repeated examinations and nineteen cases in which the results were negative so far as the microscope was used, though in most of these the clinical evidence was plain and correct.

Tuesday, August 23, 1898. Lieutenants T. and A. M. M., spherical hyaline bodies, non-pigmented, extracorporeal; Captain H. and Lieutenant L., spherical hyaline bodies, non-pigmented, extracorporeal, also a few ring-shaped bodies free.

Wednesday, August 24th. Captain S., intracorporeal, non-pigmented bodies; Lieutenants R. and W., large pigmented spherical bodies, extracorporeal; Lieutenants La F. and H., examination negative; Lieutenant J. K. M., intracorporeal non-pigmented bodies; Private H. G., Co. C, 8th Regulars, free pigmented spheres.

August 25th. Lieutenant L. G. B., 2d Mass., examination negative; Lieutenant P. W. D., 22d U. S. Infantry, intracorporeal hyaline bodies with unmistakable evidence of typhoid fever; Lieutenant H. C., 22d U. S. Infantry, examination negative; Lieutenant E. J. L., intracorporeal non-pigmented bodies; Lieutenant H. T. G., 2d Mass., intracorporeal non-pigmented bodies; Captain J. J. L., 2d Mass., intracorporeal non-pigmented bodies; Lieutenant F. B. M., 2d Mass., intracorporeal non-pigmented bodies; Captain J. J. C., 22d U. S. Infantry, intracorporeal non-pigmented bodies; Lieutenant H. L. J., 22d U. S. Infantry, intracorporeal non-pigmented bodies; Lieutenant A. C. K., 2d Mass., intracorporeal non-pigmented bodies, clinical evidence of typhoid fever; Lieutenant F. W. S., 12th Regulars, examination negative; Lieutenant W. L. T., 22d U. S. Infantry, intracorporeal non-pigmented bodies; Lieutenant W. B. L., 9th Infantry, examination negative; Captain J. F. R. L., 6th Cavalry, examination negative.

Friday, August 26th. Dr. J. S. K., Assistant Surgeon Division Hospital, examination negative; Captain C. H., 4th U. S. Infantry, free pigmented crescents in large numbers, semicomatose—a pernicious case; Lieutenant A. M. H., 4th Artillery, free pigmented crescents, not very plentiful, general condition good; Lieutenant J. A. M., 24th U. S. Infantry, examination negative; Lieutenant H. R. P., 17th U. S. Infantry, examination negative; Lieutenant W. M. B., 8th Ohio, small pigmented bodies, extracorporeal, very active; Lieutenant A. I. R., 71st N. Y., small non-pigmented bodies, extracorporeal, very active.

Saturday, August 27th. Lieutenant H. E. B., 8th Ohio, examination negative; Lieutenant H. A. L., 7th U. S. Infantry, examination negative, wounded at El Caney, photo. in *Munsey's*, page 811, September, 1898; Lieutenant J. C. R., 6th Cavalry, examination negative, delirious, had received no quinin; Lieutenant A. C., 17th U. S. Infantry, examination negative; Private A. D. K., Co. H, 2d Mass., examination negative, patient comatose; Lieutenant B. F. H., 17th U. S. Infantry, examination negative; Lieutenant K. W. T., 8th Ohio, examination negative; Lieutenant H. M. B., 1st D. C. Volunteers, examination negative; Lieutenant R. B. H., 1st D. C. Volunteers, examination negative; Major C. H., 1st D. C. Volunteers, free pigmented crescents; Lieutenant P. W. D., 22d U. S. Infantry, intracorporeal non-pigmented bodies, still undoubted evidence of typhoid fever; Sergeant T., Troop E., Rough Riders, clinical evidence of tuberculous infection proved by finding the tubercle bacilli in sputum.

Most of the above subjects were very much troubled with nausea and diarrhea, a condition quite common in cases of tertian fever on Long Island. Quinin given improperly only aggravates the distress of the patient in such cases, while in small doses properly combined with other remedies it is retained, absorbed by the system, and promptly relieves all the above conditions. Unfortunately the pharmacy at headquarters was not stocked with necessary remedies and the patients had to swallow or reject such doses as could be found. The surgeons were

obliged to hear constantly, "the goods are not in stock and prescription cannot be filled." Comment is unnecessary and the words one wishes to utter are not sufficiently expressive.

## CLINICAL MEMORANDA.

### MALARIA MANIFESTED BY EPILEPTIFORM CONVULSIONS.

By J. B. MAXWELL, M.D.,  
OF MT. CARMEL, ILL.

CASE I.—On September 1, 1894, I was called to see Mr. C., married, twenty-three years old, of slender build, on account of his having fits. He, with his wife and others, had come down the Wabash River in an open boat, the journey occupying two or three weeks. He had landed near Mt. Carmel and had been working and fishing, meanwhile living in a tent on the river bank. He suddenly became ill, developed high fever, and in an hour or two had convulsions. I was sent for in the evening, but was unable to see him until the following morning. He had not had a chill, as far as the attendants knew, but had very high fever and one convulsion right after another, there having been sixteen in all. Before I arrived he had become somewhat better, the fever having declined, and the attendants had noticed that as long as he lay perfectly still, the fits did not occur, but when he sat or stood up he was immediately convulsed.

The people were not particularly intelligent, and I did not know just how much dependence to put on what they told me, so I had him stand up, and he had a typical epileptiform convulsion. I had never seen a similar case, but the cachectic appearance, the season of the year, the location of the man's living apartments, the high fever, and things in general convinced me that the trouble was malarial, and I began a vigorous antimalarial treatment, which resulted in complete recovery, there being no recurrence for three months, at which time I lost sight of my patient.

CASE II.—On August 21, 1895, I was called to see George J., single, twenty years old. I was told that he had been having chills and all treatment had been unavailing. He had no appetite, had become very weak, and was having fits often, especially when he tried to walk. My informant gave it as his opinion that the convulsions were due to masturbation. Upon examination I found the patient's liver much enlarged and very tender on pressure. The spleen was enormously enlarged and there was a typical malarial cachexia present. He had been living for some months in the Wabash River bottoms, where ponds are numerous and the conditions for malaria are first-class. I had him stand up, and verified the report of the convulsions that had been given me. I gave him 15 grains each of calomel and bicarbonate of soda, and after the bowels had been thoroughly evacuated I gave him 30 grains of quinin in four doses, two hours apart. I then prescribed a teaspoonful thrice daily of a combination containing 1 dram of sulphate of quinin, 3 drams of dilute nitric acid, and 4 ounces of whisky. His recovery was prompt and perfect. I have seen him occasion-

ally since, and he is well and has had no return of the convulsions.

Only two cases that are at all similar to these have hitherto been reported, so far as I know, the first by Dr. Frederick Hill Stanbro, in vol. 61, page 683 of the MEDICAL NEWS. In this case there was some doubt about the cause of the convulsions, but since they disappeared promptly after the administration of quinin they were undoubtedly of malarial origin. The second case was reported by Dr. E. W. Tudlow, in vol. 67, page 428 of the MEDICAL NEWS. In this case the convulsions were at first somewhat irregular, but later occurred every other day and continued to do so for six months or more, the patient finally being cured by the administration of quinin.

### A BROWNIE BABY.<sup>1</sup>

By WHYTE GLENDOWER OWEN, M.D.,  
OF WHITE CASTLE, LA.

THOUGH the history of monstrosities is usually relegated to the domain of scientific curiosities, yet the clinical phenomena attendant upon their birth merit the consideration of the obstetrician. And again, when the much-discussed question of maternal impressions can be clearly demonstrated in their production, the subject is one not destitute of interest to all concerned in the evolution of the human race. Allow me, therefore, to claim your attention for a brief description of the following case of labor resulting in a remarkably abnormal development of conception:

On the 25th of last October I was called to see Mrs. B., a multipara, aged twenty-eight years, white, of good personal and family history. She stated that she had been having severe pains about four hours, and an examination revealed an enormous distention of the abdomen, which on palpation showed fluctuation only. The cervix was found to be well dilated, but occupied by the tense bag of waters alone. No fetus whatever could be detected. The same condition of affairs continued a couple of hours, during which time pains of moderate intensity recurred every ten or fifteen minutes. At the expiration of this time I ruptured the membranes, which resulted in the release of a miniature Niagara which fairly deluged both the patient and the bed.

Having "cleared the decks for action" by having the patient dried, regowned, and removed to another bed, an examination was instituted, and instead of the finger impinging upon some known portion of the child's anatomy the os was found to be occupied by a smooth, soft, cartilaginous body. My first impression was that this was a fibroid tumor, and deeming an exact diagnosis imperative for the patient's welfare I administered chloroform and introduced my hand. Imagine my surprise to find that the tumor extended to and connected with the head of the fetus.

A dose of ergot, and friction applied to the fundus uteri, excited vigorous contractions, which soon resulted in the delivery of the child, and cleared up the mys-

<sup>1</sup> Read at the Annual Meeting of the Louisiana State Medical Society, New Orleans, May, 1898.

tery of the presentation. The child was an exact reproduction of one of Palmer Cox's "Brownies," with the grotesque features, frog-like abdomen, and spindling limbs so familiar to all. Its most remarkable feature, however, was its cap—the thing which had puzzled me so greatly in making a diagnosis of the presentation. This consisted of a hood of fibrous tissue, of purplish hue, which originated in a space of probably  $2\frac{1}{2}$  inches on the top of the cranium and extended upward and outward about the same distance. The child weighed about eight pounds, was still-born, and it was soon the center of attraction for a curious throng of feminine neighbors who flocked in to view it.

Reverting to the cause of this *lusus naturæ*, I ascertained that during the first month of the mother's pregnancy her little boy brought home a wooden "Brownie" about 15 inches long, with its cap painted red. He threw this unexpectedly into his mother's lap, thereby giving her quite a shock, though afterward she was considerably amused upon examining the toy. I was extremely anxious to obtain possession of the child in order to submit it for your inspection, but as this conflicted with the religious convictions of the parents I was unable to do so.

## MEDICAL PROGRESS.

*Pneumonia after Ether.* — ANDERS (*University Med. Mag.*, August, 1898), in an exhaustive article upon ether pneumonia, says that he has collected statistics of 12,842 etherizations, thirty of which were followed by pneumonia. The percentage of pneumonia is, therefore, .23; while if only gynecologic cases are included, the percentage is as high as .33.

Regarding the cause of such pneumonia, the writer says that the old idea that it is due to careless exposure to cold, etc., will not explain all cases. He further states that the theory that infection takes place from the mask or cone used, is not supported by facts. Thus, in hospitals, where a fresh sterilized towel was employed, the percentage of pneumonias was not less than that where a fixed apparatus was employed. Besides this, the apparatus with which nitrous oxid is given, is of all others the best adapted for the conveyance of infection; yet no case of pneumonia following the administration of this anesthetic is on record.

Others have stated that mucus from the nose and throat, being drawn into the trachea during narcosis, predisposes the patient to an attack of pneumonia. This may be avoided in large measure by keeping the head of the patient low. The writer is inclined to attribute some weight to this cause, as eight of the thirty patients who developed pneumonia admitted having had a previous cold or cough. Sex and age seemed to have no etiologic importance, and none of the patients, as far as could be ascertained, had had a previous attack of pneumonia. The greater likelihood that a gynecologic operation will be followed by pneumonia, is due apparently, to the greater length of such operations.

Regarding the clinical peculiarities of ether pneumonia,

Anders says: "The clinical features bear a striking similarity to those of secondary pneumonia, as do also the morbid lesions, according to the distribution of the areas implicated, and as evidenced by the physical signs. It has been frequently observed that there is a tendency in secondary pneumonia to commingling with small areas of bronchopneumonia. Moreover, the lung tissue surrounding the hepatized areas is apt to be more extensively congested than in the primary form. Microscopically, the combined presence of the streptococcus and the micrococcus lanceolatus have been noted. From the latter fact, coupled with the well-established clinical similarity between secondary and ether pneumonia, as observed by myself, I do not doubt that a mixed infection often occurs in the latter form of the disease."

The diagnosis is easily made if the chest is examined. Unfortunately, this is often not done immediately, the symptoms being attributed to the wound. It is, therefore, desirable to emphasize the important fact that the sudden accession of fever, particularly if it occur coincidentally with thoracic pain, however slight, following an operation, renders a physical examination of the thorax imperative.

Of the mortality in the thirty cases, the author says: "As stated, thirteen of the thirty cases of pneumonia proved fatal, a percentage of 43.3. Surely, if ether be responsible for these fatalities, even though indirectly, there is great likelihood that, when other ill consequences are considered, it is but little less dangerous to life than its rival, chloroform."

The treatment of the patient before an operation which is most likely to lessen the danger of subsequent pneumonia includes the cure or amelioration of any existing bronchitis or rhinitis. At all events, a thorough cleansing of the mucosa of the nasopharynx is imperative, so as to prevent the aspiration of irritating morbid products (desiccated secretion, incrustations), with their lurking micro-organisms, from the higher to the lower respiratory passages, and the setting up of pneumonia, since ether promotes separation of these foreign substances. An appropriate toilet of the nasal passages as a routine practice is to be advised and encouraged. To this should be added a mouth-wash of some efficient antiseptic solution, and a similar spray for the throat. The head of the patient should be turned to one side from time to time during the operation to allow the escape through the mouth and nostrils of the mucus which collects in the pharynx. And most important of all, the time of anesthesia should be shortened as much as possible, consistent with the thorough execution of the operative procedures. In long operations especially, the cooling of the skin of the patient should be guarded against, and no sudden transition from a hot operating-room to a cold ward or hall should be allowed. It goes without saying that the quantity of ether used, and the mode of its administration, are important factors in the development of ether pneumonia.

*Acute Chloral Dementia Simulating Paretic Dementia.* — COE (*Medicine*, August, 1898) emphasizes the wisdom of keeping a patient to whom hypnotics have been given under



observation a sufficient length of time to learn if perchance it may not be a case of drug-habit insanity, as even learned alienists may be mistaken in the diagnosis of these cases. Two patients were recently brought to him for treatment, in whom the symptoms of paretic dementia were so well-marked that this diagnosis had been made without hesitation. One of these was a lady, aged fifty-six, married, of good family and without hereditary taint, who had been ill during the past five years, and had delusions, transitory in character, of a grandiose form, some months previous to the time of coming under the observation of a most excellent family physician. Ataxia was marked, especially in the lower limbs. General tremor was present, and the tongue could scarcely be extended, so marked was the trembling of that organ. There was pupillary inequality and the speech was tremulous. Insomnia was marked, and for this and the shifting pains in the back and limbs a well-known proprietary article, the chief constituent of which is hydrate of chloral, had been employed in moderate quantities for about a year and a half. Recently this amount had been increased, yet the total amount taken did not exceed on an average twenty grains of chloral daily. The prognosis which had been given was gloomy; but in six weeks after the discontinuance of all hypnotics, the patient was so far restored to health, that she assumed the management of her estate.

In the other case, the symptoms were similar, except that the mental break down was more complete, and the patient by his own admission, had taken large doses of chloral. The withdrawal of this drug was followed by the most distressing symptoms, but in four weeks they all subsided, and the patient was able to take an ocean journey to his own home.

## THERAPEUTIC NOTES.

*How to Rub in Salicylic Acid in Rheumatism.*—HUSSON (*Rev. de Therap.*, July 15, 1898) employs the following formula when he wishes to introduce salicylic acid through the skin of a patient who is suffering from rheumatism:

B	Ac. salicylic. pulv.	. . . . .	3 j
	Ol. terebinth.	. . . . .	3 j
	Lanolin	. . . . .	3 viij.

The skin is first to be cleansed with soap and water, but is not to be shaved, as the pulling upon the little hairs favors the introduction of the remedy through the skin. Friction should last for at least five minutes. After the friction is over the limb should be wrapped in cotton in order to preserve an even temperature. Treatment is to be repeated daily. One inconvenience of this method of administering salicylic acid is the desquamation of the epidermis, on account of the solvent action of the acid upon the cornified layer. However, this desquamation does not occur until five or six days have passed, and by that time the therapeutic effect of the drug has usually been fully realized. At any rate, desquamation is not painful, and treatment should not be suspended for this

cause. This method of administering salicylic acid is rapidly gaining favor on account of the annoying gastric complications which so often follow the ingestion of the drug or its compounds.

*Atropin in Delirium Tremens.*—TOUVIME (*Rev. de Therap.*, July 15, 1898), acting on the statement of Mendel that in delirium tremens some of the centers of the brain are in a state of depression, has attempted to remove this depression and so favor the recovery of the patient by the administration of caffein and atropin subcutaneously. The results obtained with the former drug were found to have only a theoretical importance, but with the latter the beneficial effects were prompt and striking. He administered it to 11 patients, of whom 6 had furious delirium, and 5 delirium of a mild type. Of these 11 patients, 10 became calm after a single injection of atropin, and in fifteen or twenty minutes they were all asleep. The dose employed was 1/60 of a grain of the sulphate. In the eleventh case, 1/40 of a grain was given in the evening to the patient, but he still remained greatly agitated. On the following morning, after a cold bath, he became more quiet, and toward evening, he, too, fell into a refreshing sleep. A non-alcoholic patient who suffered from post-operative delirium, received injections of 1/40 of a grain of the sulphate each morning and evening. He was completely restored in five days. These most interesting facts certainly call for a further trial of this drug in such cases.

*Results of the Immunization of Fifty Children.*—COVES (*Boston Med. and Surg. Jour.*, July 14, 1898) gives an account of the effects of the immunization of the children in St. Mary's Infant Asylum, Boston. An epidemic of diphtheria of unknown origin had broken out among them, and from February 15 to March 22, 1898, eighteen cases of the disease occurred. On the latter date it was decided to immunize all the children then in the asylum, and also all those who might be admitted. This plan was forthwith carried out, and for nearly three weeks from that date no cases of diphtheria occurred. At the end of this period, and before any children were immunized for a second time, cases of diphtheria again began to occur. They continued to develop until all the children were again immunized, and then, as at first, no fresh cases of diphtheria developed.

The immunizing dose varied from 1/2 to 5 centimeters of a serum of 1000 units strength. Urticaria occurred in fourteen out of the fifty children who were given injections. The older children were not affected at all by the injections, playing about as usual. The infants cried, and were restless for a few hours, and their temperature sometimes reached 101° F.

*An Agreeable Form of Administering Trional.*—According to DR. HABERMANN'S observations (*Allgem. Med. Central Zeitung*, No. 32, 1898), the exhibition of trional in a carbonated alkaline water facilitates its absorption, renders it more agreeable to take, and produces hypnotic effects in much smaller doses.

# THE MEDICAL NEWS.

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OF MEDICAL SCIENCE.

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SATURDAY, SEPTEMBER 10, 1898.

## PROPER FOOD THE ESSENTIAL FOR OUR RETURNING SOLDIERS.

FROM week to week it has been the unpleasant duty of the MEDICAL NEWS to protest loudly against the unnecessary waste of life that followed the assault upon Santiago, attended the transports while returning with the sick and wounded, and, finally, is disorganizing and necessitating the abandonment of the volunteer camps. The apparent inability of the soldiers to recover their strength and get upon their feet suggests something more than official incompetency, and makes the demand for Congressional investigation imperative. The assertion of Commissary-General Eagan that the army ration is regulated by an act of Congress, that it is prescribed by a hard and fast law of the land which neither he nor any other officer has a right to change, throws a flood of light upon the slowness with which the troops, as a whole, are recovering their wonted physique and why patients afflicted with dysentery and diarrheal troubles so generally succumb.

In the army two classes of men are recognized and provided for: sick men and well men. The sick men are in hospital, the well men outside.

The men not in hospital are supposed to be able to attend to their duties—no matter what their condition there are no special foods for them. Hardtack and bacon constitute the prescribed fare. They must eat that or nothing. This arbitrary classification has worked disastrously at Camp Wikoff and is continuing to do so. The men there who have stomachs for regular army rations are a very considerable minority. The surgeons in testifying to the cause of death are compelled in many instances to write "starvation" owing to the absence of any pronounced disease. The general vitality is so impaired that the digestive functions are not equal to the mastery of regular army food. The whole camp should have been declared by the surgeon-in-chief "a hospital camp," and every soldier, upon his arrival, put upon hospital diet, with the privilege of supplementing it if he had the inclination and capacity for a harder menu. Many convalescents could thus have been saved from a relapse and death, and many "ailing" men could have been kept out of hospital. The good condition of the Rough Riders is largely attributed to the delicacies which a diet-kitchen established in their camp has been providing for those unable to eat ordinary food.

The Porto-Rican army, which is already seriously infected with malaria, typhoid fever, and intestinal disease, is on its way home. May it not be that the experience gained at Camp Wikoff will lead to the prompt establishment of diet-kitchens throughout their detention camp so that every soldier can have all the nourishing soups, eggs, custards, broths, and other special foods that he may need? Let us grant that the established army ration is the best diet for the soldier in active service; but army traditions, and army customs, and army regulations should not carry us so far as to forget that the volunteer of three-months' training and experience has not become so inured to hardtack and bacon that his vital powers cannot be better sustained and the advance of disease better resisted by a more easily assimilated diet. Being a soldier no longer means that he must get his nourishment out of hardtack and bacon, or die.

## TROPICAL DIARRHEA.

AMONG our troops in the tropics, equally in the West and East Indies, there will be more or less mortality due to the prevalence of both tropical

diarrhea and tropical dysentery. These two diseases as met with in the tropics are much more grave in results and less amenable to treatment than in the temperate zones. They are due primarily to climatic influences which cause debility and cachexia. Tropical diarrhea is most frequently found among adults. It is essentially a chronic disease, insidious in onset, slow in progress, and if allowed to run its course unchecked, produces permanent pathologic changes in the digestive tract. Its etiology is found in anything that upsets the nervous equilibrium—*anxiety, sleeplessness, errors in diet, overfeeding, excessive use of stimulants, chronic malarial infection and impure water-supply.* Interference with the portal circulation, especially in cirrhosis of the liver, found among the high-livers of the foreign colonies in China, India, and the Straits Settlement, who, in addition to eating highly seasoned food at late hours, begin the day with cocktails, drink half-and-half frequently during its course, and go to bed on a nightcap of Scotch whisky. The preparation of the system having thus gone on insidiously, a sudden change of temperature, causing chilling of the abdomen, sudden meteorologic changes, without any appreciable surface chilling, or the shock from an imprudent cold plunge, will be immediately followed by the prodromal symptoms of the disease, which generally are slight, being only looseness of the bowels attended by tormina, quick in onset, urgent in character, and which are relieved by the passage. Some cases may have a history of the existence of a chronic non-inflammatory diarrhea a few days or weeks preceding these more acute symptoms. The character of the dejecta varies, but generally at first they are bilious, becoming lighter in color and frothy. In a few instances the first few days of the disease will be marked by feces perfectly natural in appearance but ejected with great precipitancy and some pain a number of times a day.

This condition of affairs may continue a few days or weeks, the patient growing gradually more emaciated, anemic and weak, yet, strange to say, possessing an excellent appetite and eating not only regularly but voraciously. Tenderness of the tongue and aphthous ulcers in the mouth now appear. The patient looks sick, his skin hangs loosely and is of a dirty white hue, and waxy, the fat disappears, the eye becomes glistening and sunken, mucous mem-

branes become pale, the ilia are prominent, the abdomen flaccid and sunken, and by palpation the coils of intestines may be easily marked out. The tongue is now no longer flabby but narrow and red, and its papillæ are imperceptible. The dejecta have become more frequent and fluid, the tormina more severe, and blood may be passed. The heart action grows feeble, mental apathy and physical lassitude are marked, and unless the patient be at once sent north, he soon passes into a hopeless condition.

As tropical diarrhea is the result of a general systemic degeneration, of which the intestinal changes are the most marked, the prognosis must naturally depend upon the stage in which the disease is recognized and treatment inaugurated. If taken in hand before prominent visceral changes have occurred, and if the patient is not debilitated by age or past dissipation, the vast majority of cases should terminate favorably. Perhaps there is no disease in which a greater variety and number of remedies have been recommended by authors of experience. A moment's reflection will convince one that the treatment must be symptomatic; that the symptoms must be traced to their etiology. For example, if there be obstruction to the portal circulation, astringents are contraindicated and catharsis necessary; if the diarrhea be due to cardiac insufficiently producing stasis, digitalis and iron are of great value. Waring, Luinaens, Fothergill, and many others, advocate the administration of ipecac; this may be given in small, frequently repeated doses, or in single doses sufficient to cause emesis. The writer has not been led by experience in either the tropics of the east or west to place much reliance upon this treatment. Most authorities agree upon the value of castor oil repeated according to symptoms and followed by either astringents or antiseptics.

If a single-routine plan were to be adopted for the majority of cases, such as are met with in camp where there is no time to go exhaustively into the etiology of each case, it might advantageously be as follows: Calomel in repeated doses for twenty-four doses, to be followed by a full dose of castor oil, and this, in turn, to be followed by a powder of salol, soda, and bismuth every two hours until the patient is convalescent. In the majority of cases, 10 grains of salol alone can be advantageously administered every hour during the first day, every two hours dur-



ing the second day, and, if the case has been a primary one, three times a day thereafter for about one week. If the case be of a more obstinate type, the treatment by salol may have to be continued even two weeks, interrupted occasionally by a dose of castor oil. During this time the diet must be restricted to boiled or malted milk. After the recovery of the patient from the primary attack, recurrences should be avoided by strict attention to prophylactic measures. Abdominal flannel bands should be worn constantly, and the use of fatty, sweet or highly seasoned foods, and alcohol in any form should be forbidden. From long observation among civilians and officers I am able to state unreservedly that even the moderate use of stimulants in the tropics is injurious and liable to cause gastric and hepatic changes which open the way for the gravest form of intestinal complications. Drinking water should always be boiled and filtered, and the receiving-tanks should be regularly inspected by medical officers, and periodically flushed. Exposure to the falling night dew should be avoided, and one should never sit down in wet clothing. In the jungles of Central America and in the lowlands of Central China I have never seen a case of disease due to the patient being wet while in motion or on the march, and often I have known officers and men to be soaked to the skin all day long. The danger lies in not removing the wet clothing when exercise ceases.

Add to these few and simple precautions the immediate dose of an aperient at the slightest sign of intestinal irritation, and a day or two of restricted diet, and the danger of an attack of tropical diarrhea will be greatly reduced.

The treatment of the more severe acute cases and all of the chronic forms can be summed up in a few words: send the patients home, at least temporarily, and on the road treat them symptomatically, always remembering that it is never wise to wait for a temporary improvement in the patient before starting him on the journey.

J. EDWARD STUBBERT, M.D.

## ECHOES AND NEWS.

*No Yellow Fever in the State of Florida.*—A letter from Dr. Leslie W. Weedon, health officer of the State of Florida, dated August 25, 1898, conveys the information that there has not been a case of yellow fever in the State of Florida this season.

*Deaths among Spanish Prisoners.*—The Spanish transport "Isla de Paney" from Santiago with a detachment of the surrendered Spanish troops on board has arrived at Coruna station. There were seventeen deaths on the steamer during the voyage.

*A New Water-Supply for Camp Wikoff.*—In accordance with the recommendation of Engineer-in-Chief Melville of the Navy, the distilling-ship "Iris" has been sent to Montauk Point. It is estimated that the vessel can furnish 60,000 gallons of distilled water per day.

*The American Association of Obstetricians and Gynecologists.*—The eleventh annual meeting of this Association will be held in the banquet-hall of the Monongahela House, Pittsburg, Pa., Tuesday, Wednesday, and Thursday, September 20, 21, and 22, 1898. In addition to an interesting program, consisting of scientific papers, a special feature of the meeting will be a presentation of pathologic specimens and their early histories with discussion pertaining to the same. Dr. Charles A. L. Reed of Cincinnati is president, and Dr. W. W. Potter of Buffalo, secretary.

*The Army Hospital at Fort Monroe.*—One pleasant oasis in the unfortunate condition of the Army hospitals is to be found at Fort Monroe Hospital. The inspector of the Red-Cross Society reports that the red-tape side of the management of hospitals is conspicuously absent, both in the mess-hall and in the sick wards. The men are a clean, happy-looking lot, most of them convalescent. The food given the men is good in quality and appetizingly cooked and served. The surgeons are men not too young to be without experience nor too old to have lost the distinct personal pride in the results of their treatment. They are capable as well as enthusiastic. No further assistance is required from the Red-Cross in this hospital.

*Yellow Fever at Santiago de Cuba.*—In the daily sanitary report to the Marine Hospital Service, dated August 18, 1898, the surgeon in charge says: "I have the honor to inform you that at the request of Military Governor-General Wood I visited the civil hospital to diagnose a suspected case of yellow fever. I made the examination and found a true case of the fever and had the patient isolated. It is the only case I have seen up to date. The mortality has gone down somewhat, as only forty-five deaths were reported to-day—civilians twenty-seven, military hospital fourteen, civil hospital four, Americans none. The Spanish troops are leaving now quite steadily, and we expect that by the end of the month they will all have departed. Many die on the way to the ships, and the majority embark in bad condition."

*The Earnings of Medical Men in France.*—M. Henri Berger discourses in the *Revue des Revues* more or less pleasantly, but apparently with authority, on the intellectual proletariat in France. Here are some of his observations referable to the medical profession: There are in the whole of France, inclusive of Corsica but excluding Algeria, between 12,000 and 13,000 practising medical men

of whom 2500 live in Paris, the remainder being distributed throughout the provinces. As regards the metropolitan practitioners the following is the approximate scale of earnings: 5 or 6 earn between \$40,000 and \$60,000 per annum, from 10 to 15 earn about \$30,000; 100 earn \$10,000, 300 earn between \$3000 and \$6000, 800 earn between \$1600 and \$3000, 1200 earn less than \$1600. Of the 10,000 provincial practitioners not more than half make a decent livelihood. Every year the various universities turn out about 1200 qualified doctors of medicine. The average duration of a practice may be set down between twenty and twenty-five years; it follows, therefore, that the production is twice as great as the demand. M. Berenger's statistics may be correct, but apparently he neglects to make allowances for the young medical men who are absorbed each year in the army, navy, and colonial services. Ten thousand practitioners for the whole of provincial France seems, moreover, to be anything but a liberal estimate, seeing that the number on the "British Medical Register" is at least three times greater.—*Lancet*.

**Official View of Camp Wikoff.**—President McKinley says: "What I saw of the care of the sick in the hospitals by those in charge and by the noble women engaged in that work was especially gratifying." Vice-President Hobart says: "I am agreeably surprised at the facilities I found at Camp Wikoff, particularly in the hospital service. I am not an army officer and have not a full experience in the judging of camps and camp systems, but it seems to me that Camp Wikoff is admirably adapted to army purposes at this time as a camp for recuperation. The hospital and hospital service seem to me perfect in appointments and system, and well adapted for the rapid recovery of the sick. Its location, its surroundings and its climatic conditions could not be improved. The men, with their trained nurses, cheerful surroundings, full medical equipment and good hospital service, will soon be ready to be sent home or to more permanent quarters. The country is rich enough, prosperous enough, and most anxious to give to these heroes every consideration, every comfort, and every luxury that they deserve or require." All of the rest of the Presidential party expressed themselves as delighted with the camp, especially Senator Proctor, who was enthusiastic over the location and all that he had seen in the hospital. General Wheeler in his official report dated September 3d says: "The distinguished physician, Dr. Senn of Chicago, asserts that the fever patients are much better taken care of at Camp Wikoff, both medically and in nursing, than in any other hospital he has ever seen, and the convalescents, as a matter of fact, are living luxuriously." General Shafter says: "Camp Wikoff is an ideal spot. If there is anything the matter with it, it must be under ground."

**Report on Yellow Fever in Rio de Janeiro since the Year 1850.**—Hon. Eugene Seeger, United States Consul-General to Brazil, in a recent report has the following to say regarding the occurrence of yellow fever at Rio: "The first appearance of yellow fever in Rio de Janeiro in December, 1849, undoubtedly constituted an event

of graver importance than anything that has happened here before or since. From that time on this terrible scourge has exercised its pernicious influence on the development of the great Brazilian metropolis, which would otherwise be one of the most healthy of the world's great cities, as it certainly is one of the most beautiful. As far as shown by the official records, yellow fever has caused in Rio, up to July 1 of this year, the death of not less than 54,461 of its victims, 939 since January 1. The American brig "Brazil" from New Orleans, by way of Havana, brought the infectious microbes to Bahia (November 3, 1849), whence the disease was carried into Rio. It is a characteristic feature that the foreign-born inhabitants constitute not less than about eighty-five per cent. of the victims of yellow fever. Newcomers are all in great danger during the summer months. (Of the very few foreign diplomatic and consular officers living in Rio, there died during this season: The minister of Chile, the Haitian Consul, the Chancellor of the French Consulate, and the Chargé d'Affairs of Chile.) One of the results of this condition is the fact that during the fever season (from the beginning of December to the end of May) most of the foreigners live in the more or less remote suburbs in the mountains surrounding Rio, where they enjoy a comparative immunity from the plague. This, of course, involves a great expense and a great loss of time. The best known and most frequented of those health-resorts is Patropolis, since 1894 the Capital of the State of Rio de Janeiro, about 2500 feet above the level of the sea, in the Serra da Estrella. The diplomatic corps, with but few exceptions, and the majority of the foreign business men reside there with their families, most of whom have to make daily trips to Rio. The permanent injury caused to Brazilian commerce, trade, immigration, etc., by the yellow fever is enormous. It cannot be denied that the local authorities are doing a great deal within their limited financial means and under the peculiarly difficult ethnological conditions to fight this plague."

**Railway Accidents.**—The advance sheets of the Annual Report of the Interstate Commerce Commission for the year ending June 30, 1897, gives the following statistics: The total number of casualties in the United States to persons on account of railway accidents for the year ending June 30, 1897, was 43,168. Of these casualties 6437 resulted in death, and 36,731 in injuries of varying character. Of railway employees, 1693 were killed and 27,667 were injured during the year. According to the three general classes these casualties were divided as follows: Trainmen, 976 killed, 13,795 injured; switchmen, flagmen, and watchmen, 201 killed, 2423 injured; other employees, 516 killed, 11,449 injured. The casualties to employees resulting from coupling and uncoupling cars were, killed, 214; injured, 6283. The corresponding figures for the year ending June 30, 1896, were 229 killed and 8457 injured. The casualties from coupling and uncoupling cars were assigned as follows: Trainmen, killed, 147; injured 4698; switchmen, flagmen, and watchmen, killed, 58; injured, 1325; other employees, killed, 9; injured, 260. The casualties resulting from

falling from trains and engines were as follows: Trainmen, killed, 325; injured, 2726; switchmen, flagmen, and watchmen, killed, 32; injured, 357; other employees, killed, 51; injured, 544. The casualties to the three general classes of employees mentioned caused by collisions and derailments were as follows: Trainmen, killed, 250; injured, 1327; switchmen, flagmen, and watchmen, killed, 11; injured, 74; other employees, killed, 42; injured, 251. The total number of passengers killed during the year under review was 222, injured 2795. Ninety-three passengers were killed and 1011 injured in consequence of collisions and derailments. Other than employees and passengers the total number of persons killed was 4522; injured, 6269. Included in these figures are casualties to persons classed as trespassers, of whom 3919 were killed and 4732 were injured. From summaries showing the ratio of casualties, it appears that 1 out of every 486 employees was killed and 1 out of every 30 employees was injured during the year. With respect to trainmen, including enginemen, firemen, conductors, and other trainmen, it appears that 1 was killed for every 165 employed, and 1 injured for every 12 employed. One passenger was killed for every 2,204,708 carried, and 1 injured for every 175,115 carried. Basing rates upon the number of miles traveled, it appears that 55,211,440 passenger-miles were accomplished for each passenger killed, and 4,385,309 passenger-miles for each passenger injured.

## CORRESPONDENCE.

### A POSSIBLE CURE FOR NERVOUSNESS.

To the Editor of the MEDICAL NEWS.

DEAR SIR: As the wife of a physician I have become convinced that much of the nervousness of the American people comes from the fact that two persons occupy the same bed. Again and again in a practice of twenty years have the beneficial effects of separation been noted. The stronger body always draws from the weaker. Sometimes the wife, sometimes the husband is the sufferer.

"Sleep with her, doctor," said the husband of a patient, "I couldn't sleep with her any more than I could with a catamount." His wife was afflicted with herpes zoster. Said the wife of a clergyman, herself the picture of health, "No, I cannot sleep with my husband, I seem to take all his strength and he wakes in the morning completely exhausted." Mrs. A., a physician's wife, became so nervous that she was on the verge of insanity. Dr. A. would lie by her side in uneasy, heavy sleep, dreaming of driving his horses and visiting his patients; or, worse still, grating his teeth and snoring. The wife confessed to me that she thought of her coffin with longing as a place that would be dark and still and where no one would "joggle" her. Two years ago Mrs. A. began sleeping on a cot at the bedside leaving her husband the bed "to thresh around in." At this writing she is almost cured of her nervousness and the doctor frequently answers night calls without her knowledge. Two sisters, the Misses

F., were separated with beneficial results; also the Misses W., sisters; also, the Misses M., sisters.

The Misses D., sisters, refused to be separated. They continue to look like a couple of sick owls. These are only a few of the cases that have come under our observation. In the case of pregnant women and delicate children it is only repeating what is well known to say that they should sleep alone.

If the doctor be a man of tact, and if, in the case of man and wife, the bed and not the room be changed, people will almost always be guided by the advice of a physician in whom they have confidence and whom they respect and love. The family physicians of our country are the guardians of the public health and they should educate our people on this matter till it is as well understood as the fact that it is dangerous to health to have a dirty dishcloth or to drink impure water.

L. C. FAIRMAN,

LYNDVILLE, N. Y., August 25, 1898.

### OUR FOREIGN LETTER.

[From Our Special Correspondent.]

GERMAN DOCTORS AND SPECIAL STREET PRIVILEGES IN URGENT CASES—A BOOM FOR VEGETARIANISM AND A RECENT LEGACY TO THE CITY OF BERLIN—CONGRESS FOR THE ADOPTION OF MORE HYGIENIC CLOTHING FOR WOMEN.

BERLIN, August 29, 1898.

A VERY interesting movement among German medical men just now is the effort to secure for doctors when on urgent calls the right of riding and driving through city streets as privileged persons. The first step in this line came at Augsburg, in South Germany, some time ago. Doctors who ride bicycles were, when on hurry calls, allowed to display in addition to their license number, a tag bearing a red cross upon a white ground. This secured them practically the right of way over all other vehicles and the police were instructed to aid them in making their rights in the matter effectively available. Other German towns adopted the same regulation, which promises to become universal in Germany.

In Berlin, as in some other German cities, in order to avoid accidents, bicycles are forbidden on certain of the busier streets. The regulation is a most salutary one and has saved Berlin from frequent sad accidents that occur elsewhere. Of late there has been question in police circles of still further restricting bicycling by forbidding the wheels on other streets. As this necessitates many a detour and at times even frequent dismounting, Berlin doctors have asked for the privilege in hurry calls of riding on all streets. So far their request has always been refused, but it is confidently expected that now, with the example of smaller towns as models of the feasibility of granting such privileges, the Berlin doctors will secure the favor as soon as the further closing of streets to bicycles goes into effect.

Another privilege asked for several times by Berlin doctors, but so far not granted, seems likely now to come up for favorable reconsideration. Street-cars in Berlin, as in most places on the Continent, have a certain number



of places for passengers, more than this the conductor is not allowed to take fares for. It sometimes happens then that at busy hours of the day three or four cars may pass a given point, each containing its full complement of passengers. It would be very easy to carry one more (the proverbial capacity of a street-car is just one more I believe) because ample room is accorded each passenger in the original allotment of space for passengers. Doctors who are not infrequently delayed on urgent cases perhaps by the existence of this otherwise very praiseworthy regulation, have demanded to be allowed the privilege of being carried as extra special passengers. As I have said, it seems at present as though the privilege would be accorded them. A further movement in this line of street privileges is that permitting doctors' vehicles of all kinds the right of way on displaying some suitable emblem that indicates an urgent call. German medical men are, as may be judged from these movements, thoroughly alert to secure the privileges their duties to patients demand and the spirit of professional cooperation which is at the bottom of the movements is thoroughly commendable and deserves the study and imitation of medical men elsewhere who feel the need of corresponding privileges.

At the last meeting, before the university vacation, of the Association of Visiting and Resident Physicians to the Charité Hospital, Berlin, there was a discussion by the assistant director of the hospital of the terms of a recent legacy to the city of Berlin. The Professor of Law at the University of Berne in Switzerland, Dr. Julius Baron, a former resident of Berlin, left his estate, a large one, to the city of Berlin for the purpose of establishing a home for orphans and abandoned children. To the legacy, however, is attached the condition that the children shall be brought up according to the principles of vegetarianism. By vegetarianism, the maker of the bequest explains that he means that they shall not be fed on any material that comes from dead animals of any description. Flesh and fish are to be absolutely excluded from their dietary, though products of living animals, butter, milk, cheese, honey, eggs, etc., may be permitted. The main articles of food, however, are to come from the plant kingdom.

The legacy was absolutely dependent on the conditions mentioned. The funds were to be managed entirely separate from all other city funds and were bound up by their legal bequeather, as the funds of a ward in chancery, and only the interest actually accrued was to be used, so that absolute provision was made for the perpetuity of the new institution which was to bear the name "Professor Baron's Vegetarianisches Kinderhaus" (vegetarian home for children).

In the discussion at the medical meeting at the Charité it was considered that it would be inadvisable for the city of Berlin to accept the legacy under the conditions named. Vegetarianism was to be looked upon only as a fad whose devotees even in adult life run no inconsiderable risk of serious constitutional affections owing to uncalled for interference with the normal metabolic requirements of human beings as at present constituted. The question of children being brought up on any such one-sided diet was

thought to be a dangerous and almost inevitably unsuccessful experiment that would result in weakened constitutions and enfeebled health. The magistrates of the city of Berlin thought differently from the doctors, or perhaps the large legacy dangled before the eyes of the city fathers thus temptingly was too substantial an argument against any merely medical opinions, and the legacy was accepted with its conditions.

There will be an excellent chance then in a few years to study the effect of absolute vegetarianism from the earliest years upon human beings. It is to be hoped that the gloomy forebodings of the doctors for the result of the trial will not be fulfilled. There is certainly in the light of our present knowledge of metabolism, an air of experimental research about it that would seem to make it unjustifiable. This was not, however, the idea of its founder, for years himself a confirmed vegetarian and a firm believer in the possibilities of vegetarianism to eradicate many of the physical evils, and as most vegetarians, some of the moral evils too, that afflict mankind.

A very interesting event, for vegetarians at least, has occurred since the first announcement of the bequest and its terms. Just at the beginning of July the Turning Club of Berlin held a bicycle contest, a so-called *Tages-Dauermarsch*, a continuous day's travel, the contestants in which to get a place, must have completed 15 German miles (112.5 kilometers, about 70 English miles) in 18 hours. The contest was won by a vegetarian who made the distance in the record time under the conditions (we quote German papers) of 14 hours and 11 minutes. He arrived at the finish in comparatively good condition, fresh and not exhausted. Of 23 other contestants 8 were vegetarians and 6 of them were the first in the contest and made the distance within the time limit. Only 1 of the 15 non-vegetarians made the distance within the time, all the others having to give up. The winners had no special training for the event, but were like the other contestants, ordinary members of the Turning Club. During the run the vegetarians consumed only sweet fruits, fresh salads, and some bread and milk. So long as the meat-eaters remained in the race the difference as to the two classes of contestants in the matter of exhaustion was very striking and in favor of the vegetarians, who looked fresh and unruffled when the others were already playing out.

The event has attracted a great deal of attention in Germany. The army officials have consulted the winner and his friends as to their diet and habits and have instituted a set of investigations as to their power of standing military fatigue on a vegetable diet. So far the results are said to be surprisingly favorable to the energy that can be developed on a dietary so supposedly insufficient. The result has been a boom to vegetarianism otherwise in Germany, and the number of vegetable restaurants has notably increased in Berlin. Though the idea seems so foreign to German notions, there have always been some, while those that exist are much more frequented than before.

From the 3d to the 18th of September the Association for the Improvement of Women's Clothing and of Hy-

giene for Women holds an exposition in Berlin, at which the recent models and sketches for healthful, convenient, and graceful garments for women are to be exhibited and the latest suggestions in this line discussed. Prominent medical men and medical societies have been especially invited to give their attention to the subject. Despite the fact that most young German women during their turning exercises wear trouser suits that are extremely comfortable and certainly not ungraceful, the problem of easy hygienic garments for women, that shall not be dirt- and damp-catchers is no nearer solution than it is with us.

Of late female enthusiasm for the bicycle in Germany has made sad inroads on the hidebound conservatism of the older generation of German women. It really begins to look as though the new sport and exercise is going to do more to hinder some of the hideous sacrifices to beauty of form and grace than the bigoted worship of the goddess Fashion has so far demanded and obtained from her votaries than all the protests of medical men and common sense for centuries. Zola, in his latest book, "Paris," has one of his female characters express the opinion that the bicycle will lead to the doing away with skirts, especially the long and clinging garments that are such a hindrance to movement, are so dirty, such scavengers of what is vile and contagious upon the pavement and yet are certainly anything but ideally graceful. There is the added Zolaesque touch that the exposure of ankles and even calves on the street cannot be so dangerous as the exposure of breasts in décolleté dresses in the ballroom, but that, of course, may be a matter of the point of view.

In any case medical men cannot but welcome modifications of women's clothing that allow freer movement and bring with them freedom from abuses that have been the subject of medical protest for years. The results of the present exposition will be watched with interest by German medical men, for German women with ideas have a way of taking the bit in their teeth and overleaping barriers, and something practical may result.

## SOCIETY PROCEEDINGS.

### AMERICAN CLIMATOLOGICAL ASSOCIATION.

*Fifteenth Annual Meeting, Held at the Maplewood Hotel, near Bethlehem, N. H., August 31 and September 1, 1898.*

#### FIRST DAY—AUGUST 31ST.

BEFORE the reading of the President's address fitting tributes were paid to the memory of Dr. T. D. Bratton of Augusta, by Dr. Otis, of Dr. Harrison Allen of Philadelphia, by Dr. R. G. Curtin, and of Dr. William Pepper by Dr. J. H. Musser.

After welcoming the members of the Association the President, DR. E. O. OTIS of Boston, delivered an address on Avenbrugger and Laennec, the discoverers of percussion and auscultation. He thought it eminently proper that an association devoted largely to the consideration of diseases of the chest should honor the

memory of these illustrious men by reviewing their lives and work. He gave an account of Avenbrugger's life and his great work on percussion. His life, modest like that of most great men, was spent in enthusiastic devotion to his profession and in love and service to his fellow men. His "Novum Inventum" was revived by Corrisart in 1808 by a French translation, with copious commentaries and its inestimable value shown.

The incident leading to Laennec's discovery of auscultation was given. The development of the discovery was traced and the making of the stethoscope. Laennec's whole life was absorbingly devoted to professional pursuits. He was absolutely true and unselfish in his professional aims. In the diagnosis of diseases of the chest he was universally acknowledged to be without a rival.

DR. FREDERICK I. KNIGHT of Boston read a paper on

#### SOME ERRORS OF GENERAL PRACTITIONERS IN DEALING WITH CASES OF PULMONARY TUBERCULOSIS.

He referred to certain common errors which he thought might be diminished if his remarks were endorsed by the members of the Association. The errors to which he especially called attention were:

1. Failure to make an early diagnosis, which is usually easy since the discovery of the tubercle bacillus.
2. Failure to admit the gravity of the situation the moment it is discovered, and to put the patient at once in the best possible condition for recovery. Niemeyer used to say that the danger of a consumptive patient was "that he became tubercular." In the light of modern pathology Dr. Knight would say that the danger of a tubercular patient is that he became consumptive, *i.e.*, subject to secondary infection. There is often failure to sufficiently impress the patient also with the gravity of the situation to secure his thorough cooperation in the effort for his recovery.
3. While temporizing, giving nauseating medicines, too much alcoholic stimulants and prescribing exercise, etc., which only hasten the decline.
4. Sending patients away from home who have only a few months or weeks to live, or who have not sufficient money to live properly away from home long enough to do them any good; also, exercising insufficient care in the selection of a residence for those who are suitable for change.
5. Insufficient professional supervision of patients, who always require constant watchfulness whether at home or at some climatic resort.

DR. VINCENT Y. BOWDITCH of Boston read a paper on

#### THE RESULT OF SOME RECENT EXPERIENCE WITH PHTHISICAL PATIENTS.

He said that in his examination of patients he had been frequently impressed with the fact that one or two of what he believed to be the most important features in diagnosis, or rather prognosis, had apparently been overlooked by the physician in attendance. Although ordinarily comparatively easy to make a diagnosis of pulmonary tubercular disease, in cases where dulness

upon percussion, changes in the respiratory murmur and even râles are lacking—cases in which the power of diagnosis and prognosis are taxed to the utmost—he had frequently found that the general practitioner had not paid sufficient attention to what he deemed the most important symptoms, the quality of the pulse, the temperature, and condition of the digestive organs. Post-mortem examinations had frequently shown that in patients with few physical signs in the chest, but with a weak, rapid pulse, more or less elevated temperature and poor condition of the stomach, there had been an almost universal dissemination of tubercle, without, perhaps, marked breaking down of tissue. These unfavorable conditions of the pulse, temperature, and digestive organs he believed entirely inconsistent with a truly *incipient* form of tubercular disease, even when the physical signs in the chest are few or entirely lacking.

He referred to and emphasized his observations in a previous publication "A Plea for Moderation in Our Statements Concerning the Contagiousness of Phthisis" (*Boston Med. and Surg. Jour.*, 1896). While appreciating fully the teachings of bacteriology, the importance of absolute cleanliness in connection with phthisical patients, and attention to the general health of those in attendance, he maintained that this care could be kindly and wisely given without causing a spirit of terrorism and without making such sweeping and unjustifiable statements as that "all homes for consumptives are a source of danger to the surrounding community."

He mentioned the statement of Flugge of Berlin (*Deutsch. Med. Wochenschrift*, October 15, 1897) regarding the possibility of bacilli being carried in small droplets of mouth fluid into the air during the act of coughing, and believed that we should wait for further proof before accepting this extreme theory.

The papers of Drs. Knight and Bowditch were discussed jointly. DR. DIDAMA referred to one of the errors mentioned by Dr. Knight of sending patients to Colorado and elsewhere who are too far advanced in consumption, and said it would seem that some physicians send them away to escape signing the death certificate. Yet there have been instances of patients who have had many hemorrhages being benefited by residence in Denver. He questioned whether when the disease is far advanced, and the patient nervous about his condition it is right to tell him frankly the absolute truth. Regarding the remedies, he said consumptive patients are expected to improve as the medicine is changed, or as they changed the doctor. Even within two or three days of their death there is an improvement in their symptoms. He was glad Dr. Bowditch had spoken of the too common feeling that consumptives are social lepers. He did not believe there is any particular danger in having a friend call who had a consumptive cough.

DR. WALKER of Philadelphia agreed heartily with the sentiments of both papers.

DR. R. G. CURTIN of Philadelphia was much pleased with Dr. Knight's remarks in regard to the old-fashioned treatment of tuberculosis. He agreed with the remarks of Dr. Didama that physicians are often to be blamed for

sending patients away when they would be better at home, yet there are times when the advice is unheeded until the disease is too far advanced.

DR. J. H. MUSSER of Philadelphia thought it one of the most difficult things in medicine to decide which patients should be sent away, and which retained, and cited the case of a patient in whom general tubercular infection had apparently advanced to extreme weakness and emaciation, whom he had advised to go to the Adirondacks. His stay there under medical treatment had resulted in arrest of all manifestations of the disease.

DR. HART of Denver said that the papers of Drs. Knight and Bowditch expressed exactly what he had wanted to hear. He said too often patients arrive at Denver in about the condition in which they are finally sent home, with every indication of advanced tuberculosis, and that it is a very difficult thing for the physician at a health-resort to manage these patients.

DR. CHARLES E. QUIMBY of New York said that he had nothing to say personally, except that which Dr. Bowditch and Dr. Knight felt their kindness of heart prevented them from saying, and had requested him to say, that while their papers were directed to the general practitioner, they were intended for us all.

DR. COLEMAN, although having had but few cases illustrating points brought out in the papers under discussion, believed that the early appreciation of the tubercular lesion is the key to the cure and that where a proper physical examination is made many of the errors will be avoided. He had made it a rule of his life to make a thorough physical examination of all patients coming to him.

DR. BEVERLEY ROBINSON of New York said that while he agreed that a great many individuals are not examined accurately enough and the diagnosis not settled sufficiently soon nor proper and judicious treatment not followed up at all times as it should be at the time most favorable, he believed that with a better understanding of the disease, the better education of our medical colleges, this error will be much less frequently committed.

DR. KNIGHT said, in closing the discussion, that in the treatment of tuberculosis he thought the excessive use of syrups should be avoided as much as possible.

#### SECOND DAY—SEPTEMBER 1ST.

DR. JUDSON DALAND of Philadelphia read a paper, entitled

#### A CASE OF DISSECTING ANEURISM OF THE THORACIC AORTA RUPTURING INTO THE PERICARDIAL SAC AND CAUSING IMMEDIATE DEATH.

Dr. Daland said that the rarity and completeness of this lesion, the evidences of complete reparation of a similar lesion above the former one, and the extraordinary changes in the heart and aortic valves, together with the unusual mode of death led him to call attention to a case which he described in detail. The patient was a man thirty-eight years old, whose personal and family history was unimportant except that he used whisky moderately. He sought relief from edema of the legs, headache, and diarrhea. His symptoms improved under absolute rest,



eight ounces of buttermilk every two hours, and Basham's mixture. He gradually resumed a mixed diet and did not again seek medical aid for four years. During this interval he returned to the use of whisky, averaging two pints a day. Examination showed marked arteriocardillary fibrosis, and considerable increase of hypertrophy of the left heart with a faint systolic murmur. Two years previously he had suddenly experienced complete loss of muscular power without other symptoms. The urine presented a moderate amount of albumin and a few hyalin tube casts. Three months later he complained of excessive muscular weakness and fear of death, accompanied by headache and morning vomiting. In a few weeks he suddenly developed left hydrothorax with excessive frequency and irregularity of breathing, rapid and irregular heart action and cyanosis which were relieved by thoracentesis. Five years after the first examination ordinary evidences of cardiac failure showed themselves and he died suddenly in December of the same year apparently from cardiac failure. The diagnosis was marked arteriocardillary fibrosis, enormous left ventricular hypertrophy and dilatation, with mitral regurgitation and chronic interstitial nephritis alcoholica.

The autopsy showed one-half inch above a recent rupture of the aorta, a linear spot measuring one-half inch in length and parallel to the long diameter of the artery. It communicated directly with the pericardial sac and was the immediate cause of death. There was evidence that the dissecting aneurism extended for an unknown distance into the thoracic aorta.

DR. BEVERLEY ROBINSON of New York read a paper, entitled

#### CLINICAL NOTES ON ASTHMA AND ITS TREATMENT.

The essayist said that among the diseases which the practitioner is called upon to treat none is of greater interest than asthma. This interest is partly due to its etiologic obscurity. The cases of so-called nervous asthma in the speaker's experience have been infrequent, and he believed that when we are better informed examples of purely functional asthma will perhaps no longer be described. He believed that despite the existing nervous irritability the asthmatic attack would rarely occur were there not other discernible cause which more advanced researches will reveal. Conditions of the blood are often ignored. Malarial toxemia is frequently present and yet overlooked. It is wisdom to act in accord with its recognition. If there be a sudden chill followed by rise of temperature and sweating and if at the time of the chill and previous to the giving of quinin internally a skilful microscopic blood examination be made the plasmodium malarie should be found. For an asthmatic attack of probable malarial causation he advised increasing doses of Fowler's solution of arsenic to its physiologic effect; if the bowels are constipated and liver inactive, Warburg's extract in 5-grain doses three or four times daily; if anemia be present, quinin, iron, and arsenic in a suitably formulated pill, the following being a favorite with the speaker: 1 grain of reduced iron, 2 grains of sulphate, or preferably the muriate of quinin, and  $\frac{1}{16}$

to  $\frac{1}{32}$  of a grain of arsenious acid, three times daily after meals. Of course, if the attack be severe, one should employ antispasmodic remedies, and also permit patients to smoke and inhale from a cigarette d'Espic, datura Tatula (Savoy and Moore), or of simple niter paper. As a last resort, the inhalation of a small quantity of chloroform or a hypodermic of morphin and atropin may become our only satisfactory help.

He was in accord with those who find in the constitutional conditions of gout and rheumatism an underlying influence of great power in causing nervous irritability and characteristic appearances of the throat, and where there is a clear history of these affections one may infer in many instances that the asthmatic attack is of similar origin.

As to the reflex causes of asthma, when one finds in the nose and throat morbid conditions one cannot be satisfied with the care of the patient unless operative interference be undertaken to modify or remove these evidences of disease. While this is true, it should be admitted that several prominent throat specialists have exaggerated the diseased conditions of throat and nose as causative in producing asthmatic attacks.

In chronic gastric catarrh, brought on by errors of diet, or alcoholic habits, frequently lavage of the stomach and a regulated regimen have afforded great relief in the asthmatic seizures. In the consideration of bronchitic cases of asthma with some development of emphysema one is confronted with questions clinically most difficult to decide. When the bronchitis is clearly defined and the secretion slight one's main effort should be to stimulate the latter by appropriate means, and here small repeated doses of ipecac, tartar emetic, grindelia robusta, chlorid of ammonia, and iodid of potassium are very useful. Where the bronchitis is also evident and yet there is much bronchial secretion, belladonna or atropin must be combined in small or moderate doses with the drugs previously named, or should be given with a little camphor and quinin in capsule or tablet form, or what is often preferable, alone, until their physiologic effect is manifest. When the emphysema and bronchitis are clearly defined, and when the asthma is also pronounced, one must have recourse for temporary results to inhalation of the fumes of the antispasmodic cigarettes, the repeated use of oxygen gas, or the administration of Hoffman's anodyne, alcohol, hot coffee, capsules of ether, or chloroform.

Where in connection with the previous conditions there is evident cardiac distention one must have recourse to nitroglycerin or the nitrites, or to a soluble salt of caffeine (salicylate), either by the mouth, or hypodermically. Occasionally blood-letting, by bleeding from the arm, or the use of leeches, or wet cups to the chest or epigastrium will afford more or less lasting relief.

The question of change of locality is one difficult to solve. Personally, the speaker was inclined to believe, after considerable experience, that the climatic conditions which shall prove best for subacute or chronic bronchitis are also those best suited to the bronchitis when complicated with asthma.

DR. A. JACOBI of New York read a paper on

## ERGOT IN CHRONIC MALARIA,

which will appear in a later issue of the MEDICAL NEWS.

A paper by Dr. R. C. Newton of Montclair, entitled "A Preliminary Report on Sixty-five Cases of Malarial Fever in Relation to Their Contiguity to Certain Brooks," was read by title. A paper by Dr. J. C. Wilson of Philadelphia, entitled "The Natural History of Pulmonary Tuberculosis," was read by title. Papers by Drs. Theobald Smith of Boston and J. C. Mulhall of St. Louis were also read by title. The paper by Dr. Andrew H. Smith of New York on "Oxygen Inhalations in Acute Pulmonary Affections," will appear in a later issue of the MEDICAL NEWS.

DR. J. M. ANDERS of Philadelphia presented a paper on

## SANATORIA FOR THE CONSUMPTIVE POOR,

showing the extent and urgency of the needs presented by the large class of phthisic patients, and the value of special hospitals and sanatoria for their treatment, and discussed the discrimination of the cases among the lower class into three groups, and the remedy for each. He stated that statistics prove pulmonary tuberculosis to be proportionately far more common and inauspicious among the lower than among the higher classes, and that the almost absolute lack of proper facilities for the poor afflicted with pulmonary tuberculosis is a most potent factor in maintaining the large death-rate. He believed special hospitals to be superior to separate wards in general hospitals for the treatment of cases of pulmonary phthisis, and quoted a reduction of fifty per cent. in the mortality-figures when special hospitals are used for the disease. He believed sanatoria near large cities to be even better than the special hospitals in densely populated centers, and climatic sanatoria, in the earlier stages of the disease, have showed results surpassing those of all other known methods of treatment.

For patients hopelessly afflicted he advocated every comfort, such as could be furnished by special hospitals in healthful urban localities. For the incipient cases among the pauper element sanatoria located in close proximity to large municipalities, with special reference to purity of atmosphere and with protection by natural elevations or woodland from chilly blasts, should be provided. Patients with phthisis pulmonalis among the middle and working-class, or those having small means, would be compelled to depend principally upon private philanthropy and probably semi-State institutions. He approved of the combined sanatorium and climatic treatment and believed it could be made almost self-supporting.

DR. E. R. BALDWIN of Saranac Lake, N. Y., read a paper on

## INFECTION FROM THE HANDS IN PHTHISIS.

The paper described the results of an examination of the hands of twenty-eight patients by washing their fingers in a sterilized, weakly alkaline solution. Inoculation of the washings into guinea-pigs was successful in producing tuberculosis from ten out of fifteen patients, mostly in advanced stages of the disease, and many of whom expectorated into handkerchiefs. Out of twenty-four cases in which

the centrifugated washings were examined microscopically for bacilli, six were positive. The author regards the danger of infection from the hands as small unless it shall be shown that the disease is more frequently acquired through the mouth, but urges more general use of cheap, destructible handkerchiefs, and frequent ablution when cuspidors are impracticable.

DR. FRANCIS H. WILLIAMS of Boston read a paper, entitled

## APPLICATION OF THE X-RAYS IN THE DIAGNOSIS OF TUBERCULOSIS.

The paper presented a general statement of the medical applications of the X-rays. One of its most useful applications is for diseases in or contiguous to the thoracic cavity, and in that connection the speaker considered the subject. Diagrams were shown which were made by transferring outlines which the author had drawn on the skin of patients while looking through the fluoroscope, to a skeleton outline copied from one of Luska's plates. The position of the diaphragm and heart were shown as in full inspiration, and the position in expiration. In health it is seen that the diaphragm has a wide excursion between the extremes of respiration, and that the heart also changes its place. The difference in the brightness of the lung area between expiration and full inspiration may be perceived by means of the fluoroscope. This shows how conditions involving congestion, as in early tuberculosis or in some form of cardiac disease, may alter the appearances in the fluoroscope. The diagram of health was used as a key to the others and comparisons made with it and the diagrams of the various diseases. Thoracic aneurisms may now be always recognized with certainty. Further symptoms due to aneurism are sometimes ascribed to other diseases and an X-ray examination is required to establish the diagnosis.

Diagrams were exhibited showing the excursions of the diaphragm, the position of the heart, and the appearances in emphysema, pleurisy, pneumonia, pulmonary tuberculosis, pneumohydrothorax, and pneumothorax. As the X-ray examinations in pulmonary tuberculosis come more into use the speaker was convinced that the presence of the disease will be recognized earlier. A number of cases were cited, chosen to illustrate some of the ways in which X-ray examinations might be useful in pulmonary tuberculosis.

DR. E. FLETCHER INGALLS of Chicago presented a paper on

## THE VALUE OF SYSTEMATIC PHYSICAL TRAINING IN THE PREVENTION AND CURE OF PULMONARY DISEASE.

In considering this subject he called attention to the fact that one of the most common observations made by medical men is that the long, narrow, flat-chested person is the one most liable to the development of tuberculosis, and that in persons presenting this form of chest the chances for recovery are reduced to a minimum. He thought the observance of systematic physical training in aiding to develop the respiratory muscles, thoracic walls, and pulmonary capacity would be of much service in pre-

venting tuberculosis and also in curing it in its early stages. Since collapsed air-cells furnish a most favorable nidus for the development of tuberculosis, he urged that measures should be adopted to expand the lungs and speedily bring the air-cells into the best possible working condition. He believed it probable that the lungs are rendered more susceptible to the tubercle bacilli and their toxins by an early tubercular localized anemia which diminishes the nutrition. Of the eighty per cent. of the human family said to be affected by tuberculosis the majority recover, and the mortality is not more than twelve per cent. If, as has been stated, the presence of the disease had only been found at autopsy, after death from other causes, and in those who had recovered it had made but little progress, he thought it a duty to recommend measures which would strengthen the resisting power of the lungs. As a means of prophylaxis his first measure would be to instruct the patient in deep breathing. He attached the greatest importance to careful physical training, believing that the long, narrow, flat chest might be materially improved in form and circumference, and Nature given a greater chance to throw up barriers against the disease.

DR. IRWIN H. HANCE of Lakewood, N. J., presented a paper on

#### A SINGLE TEST OF THE VIRULENCY OF SPUTUM KEPT MANY MONTHS.

He referred to the virulency of the tubercle bacilli as demonstrated by the clinical pictures of pulmonary tuberculosis and the resistance of these germs against development. He reported the experiment of Stone, in 1891, in which the tubercle bacilli retained their form and virulency for three years. Similar experiments made by himself were described with results so different as to justify the conclusion that the tubercle bacilli were no longer viable, and the following queries were presented: Whether sputum which remains in a liquid state for a long time develops toxins inimical to the life of the tubercle bacilli? Whether the result would not have been different had the sputum been more virulent in its character, and taken from a case of acute, active tuberculosis? Whether if sputum dries more rapidly does it retain its virulency longer? All such queries he believed could only be answered by further experimental work.

DR. J. E. STUBBERT of Liberty, N. Y., read a paper, entitled

#### SOME STATISTICS UPON SEROTHERAPY IN TUBERCULOSIS,

giving a short history of experiments in antitubercle serums with the theory of its action and the methods of preparation. The action of the tubercle serum is indirect rather than germicidal. Partial immunity has been secured by de Schweinitz in guinea-pigs. The serum developed in horses has been found more effective than that from other animals. The amount of clinical material furnished he believes insufficient to justify evidence in the good results claimed for different serums. The serum manufactured by the United States Government under de Schweinitz is his preference, and the following results

are given of 82 patients treated by this serum: Expectoration decreased in 82 per cent., appetite improved in 81 per cent., weight gained in 78 per cent., physical signs improved in 82 per cent., temperature decreased in 49 per cent., bacilli disappeared in 13 per cent., apparent immunity established in 21 per cent., bacilli decreased in 35 per cent., cough decreased in 79 per cent., generally improved in 85 per cent.

The use of the serum is indicated only in incipient cases, although temporary reduction of temperature has been obtained in advanced cases in a few instances. He has used the antistreptococcic serum to reduce cases of mixed infection to those of simple, that the action of the antitubercle serum might act more freely. His experience in this, however, has been insufficient for definite conclusions. No danger attends the injections. The advantages claimed are absence of interference with digestion; in cases in which the bacilli have disappeared they have done so while the sputa was still present; no report of relapses even in patients returned to their former environments.

The writer is not a thorough advocate of serotherapy, adhering still to climatic, hygienic, and dietetic treatment in all cases, but believes that sufficiently good results have been obtained to justify further research in this direction, better pursued in sanatoriums.

DR. HENRY P. LOOMIS of New York read a paper on

#### THE PRETUBERCULAR STAGE OF PHTHISIS, OR THE CONDITION WHICH ANTEDATES TUBERCULAR DEVELOPMENT, AND SOME AIDS TO ITS DIAGNOSIS,

claiming that there is a condition precedent to the initial development of tuberculosis which should be called the pretubercular stage. The signs are to be looked for in the corpulence of the individual, in the chest conformation and vital capacity, in the constitutional condition, and in the character of the pulse. It is possible in many cases, especially in chloro-anemics, to diagnose phthisis before the appearance of physical signs or the tubercle bacilli in the sputum. Weight, respiratory capacity, and chest measurement have no value in establishing the possibilities of the development of phthisis in themselves but must be considered in relation to the height of the person, when they furnish three important aids to diagnosis. Corpulence is obtained by dividing the weight by the height expressed in feet. Normally in a man it should be 26; in a woman, 23. Chloro-anemia and persistent and unexplained disturbances of the digestive system are symptoms of the pretubercular stage. There are two characteristics of the pulse found in the pretubercular stage and early stage of phthisis: (a) change of position has practically no influence on its rhythm; (b) relative feebleness of arterial pressure.

DR. CHARLES E. QUIMBY of New York read a paper, entitled

#### A PLEA FOR MORE ACCURATE METHODS OF RECORDING THE RESULTS OF PHYSICAL DIAGNOSIS OF THE LUNGS.

He said that this latter half of the Nineteenth Century has come to be known, no less in medicine than in other



branches of science, as the age of progression. We as physicians may rejoice with peculiar satisfaction that in medicine the change has not been solely one of technic and application but that in many lines at least we have started upon a strictly scientific basis. While surgery may perhaps present to the layman the most abstrusively attractive illustrations of exactitude in methods and results, the more critical and closely analytical professional mind must admit that the broadest and most potentially valuable advances in medical science of our own time have been in the domain of medicine. The very word, physical diagnosis, presupposes definiteness and certainty, claiming as it does for a basis the best developed of limited sciences.

The purpose of the paper was to outline some modest attempts at recrystallization and to urge the adoption of a scientifically accurate method of recording the results of physical examinations of the lungs. That it is possible to make such a record, and in such manner as will render it a direct index to the amount of disease and a standard for future reference, he was fully convinced. Complete physical record of respiration at any given point comprises: (1) the pitch note of the trachea; (2) that of inspiration and expiration, and (3) the relative length of these two sounds expressed as a fraction. For example, respiration at point *a*, left chest; tracheal note *g*; inspiration, *f*, above; expiration, *e*, between; rhythm,  $\frac{3}{4}$ .

It is understood that the foregoing statements refer solely to respiratory sounds as affected by uniform changes in the chest and exclude localized excavations, although the same principles may be applied to these conditions. Thus respiratory with percussion sounds afford an absolutely scientific, accurate record of pulmonary conditions and changes. It were superfluous to dilate upon the value of such records in cases remaining under our own supervision or for such as we desire to send to other climates and places in the care of other physicians.

#### THE DISTRIBUTION OF PULMONARY TUBERCULOSIS IN NEW JERSEY

was the title of a paper by DR. GUY HINSDALE of Philadelphia, who exhibited a map on which the various regions of the State were platted so as to show the different degrees of prevalence of the disease. He said that the distribution of tuberculosis in this State corresponds in great measure with well-known facts relating to the disease. Contrasted with New York and Pennsylvania New Jersey does not show such wide variations. In the former State there are counties in which the disease is three or four times as rare as in the same densely populated districts. In New Jersey the counties in which the larger cities are situated show a prevalence only twice as great as in the sparsely settled regions. Hudson, Essex, and Mercer counties, in which are situated Jersey City, Newark, and Trenton, have from four to five hundred persons living to one death from phthisis, while Sussex, Warren, Hunterdon, and Gloucester counties, have between eight and nine hundred persons living to one annual death from phthisis. The remaining counties were platted to show the three intermediate grades. Elevation above tide does not play a part as it apparently does

so plainly in the case of Pennsylvania. In New Jersey on the other hand, one of the counties, Gloucester, in South Jersey, is quite low, but it belongs to the group in which tuberculosis is least prevalent. It is, at least, one of the three counties in which the disease is prevalent. In the northern and northwest part of New Jersey the surface is more diversified, reaching elevations of about 2000 feet. The soil in the northwestern half of New Jersey is largely red clay with out-croppings of sandstone, and in the northeastern portions trap rock. In Essex County there are positive evidences of a great prehistoric lake, called Lake Passaic. Its southern portion is the present site of a great swamp. The soil of the southern half is principally sand which in places like Lakewood reaches to a depth of six or seven hundred feet. But the character of the soil would seem to have little if any influence in the present instance in modifying the presence and distribution of tuberculosis. It is density of population which bears the closest relation to the distribution of tuberculosis in New Jersey. A diagram was shown in which this relation was characteristically represented. The counties which have less than one acre to each inhabitant have a high death-rate from tuberculosis, while Atlantic, Sussex, and Cape May Counties, which have from ten to twenty-two acres per inhabitant, have a low death-rate. Three of these are maritime counties. Sussex has the lowest death-rate of the four, and of all of the counties in New Jersey it is farthest from the sea and embraces the highest land in the State. It adjoins Pike County in Pennsylvania, one of the wildest and most heathful in that State.

The following officers were elected for the ensuing year: President, Beverley Robinson of New York; vice-presidents, James A. Hart of Colorado Springs and R. C. Newton of Montclair, N. J.; secretary and treasurer, Guy Hinsdale of Philadelphia; Council, Isaac Hull Platt of Lakewood, N. J.; S. C. Solly of Colorado Springs; James B. Walker of Philadelphia; E. Fletcher Ingalls of Chicago, and E. O. Otis of Boston. Delegates to the Executive Committee of the Congress of American Physicians and Surgeons, F. I. Knight of Boston; alternate, Roland G. Curtin of Philadelphia.

The following were elected to active membership: Howard S. Anders of Philadelphia; Edward L. Baldwin of Saranac Lake; S. Westray Battle of Asheville; D. R. Brower of Chicago; L. D. Bulkeley of New York; W. E. Casselberry of Chicago; Walter F. Chappell of New York; R. A. Cleemann of Philadelphia; E. C. Dudley of Chicago; Albert C. Getchell of Worcester, Mass.; Alexander Lambert of New York; Samuel K. Merrick of Baltimore; J. E. Stubbett of Liberty, N. Y.; James Tyson of Philadelphia; Herbert Whitney of Denver; Harold Williams of Boston; F. H. Williams of Boston. To corresponding membership: G. G. Eyre of Claremont, Cape Town; Samuel Gache of Buenos Ayres; Eduardo Licéaga of Mexico; Domingo Orvañanos of Mexico; Carl Ruedi of Arosa, Switzerland; Septimus Sunderland of London; Clement L. Wragge of Brisbane, Australia.

The Association adjourned to meet in New York City in May, 1899.